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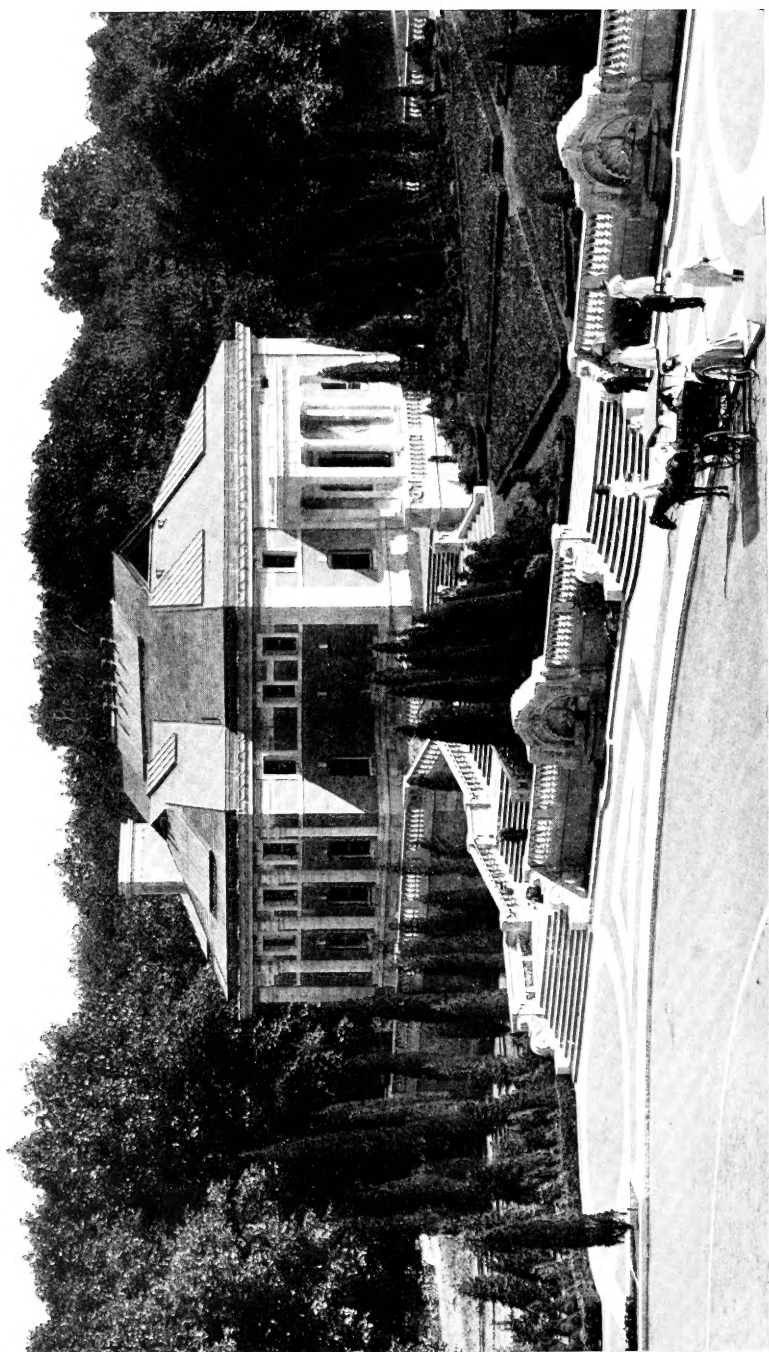
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THE PROMOTION OF ZOOLOGY

1909



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 BARNES, MISS SARAH P.,  
 BARNEY, A. L.,  
 BARNEY, ASHBEL H.,

BARNEY, MRS. J. STEWART,  
 BARNEY, N. C.,  
 BARNUM, WILLIAM M.,  
 BARRON, GEORGE D.,  
 BARROW, MISS,  
 BARTON, WILLIS E.,  
 BATTERSON, JAMES G.,  
 BAUMANN, GUSTAV,  
 BAUR, H. O.,  
 BAXTER, GEORGE S., JR.,  
 BAYARD, LOUIS P.,  
 BAYLIES, EDMUND L.,  
 BAYLIES, MRS. NATHALIE E.,  
 BAYLIS, WILLIAM,  
 BAZIN, FELIX A.,  
 BEACH, WALTER R.,  
 BEADLESTON, ALFRED N.,  
 BEAL, WILLIAM R.,  
 BEARD, DANIEL CARTER,  
 BECKER, CHRISTIAN,  
 BECKER, CONRAD,  
 BECKER, PHILIP,  
 BEERS, M. H.,  
 BEHR, ROBERT,  
 BEIDEL, HERMANN,  
 BELL, PARK E.,  
 BEMENT, EDWARD,  
 BENKARD, HARRY H.,  
 BENJAMIN, EUGENE S.,  
 BENSON, MISS MARY,  
 BENSON, MISS THYRZA,  
 BERGSTRESSER, CHARLES M.,  
 BERGSTRESSER, MRS. CHARLES M.,  
 BEROLZHEIMER, E.,  
 BERNHEIMER, CHARLES L.,  
 BERNHEIMER, SIMON E.,  
 BERRY, SAMUEL,  
 BERTRON, S. R.,  
 BEYER, MAX J.,  
 BICKMORE, PROF. ALBERT S.,  
 BIER, MRS. SYLVAN,  
 BILLINGS, FREDERICK,  
 BINDEWALD, WILLIAM D.,  
 BIRCHALL, W. H.,  
 BIRD, EDWARD DIMON,  
 BIRD, GEORGE,  
 BISHOP, MISS MARY CUNNINGHAM,  
 BISHOP, OGDEN,  
 BLADGEN, MRS. GEORGE,  
 BLADGEN, MRS. JULIA G.,  
 BLAIR, D. C.,  
 BLAIR, J. INSLEY,  
 BLAKE, DR. JOSEPH A.,  
 BLAKESLEE, T. J.,  
 BLATCHFORD, MRS. SAMUEL A.,  
 BLISS, ERNEST C.,  
 BLODGETT, WILLIAM TILDON,  
 BLOODGOOD, ROBERT F.,  
 BLOOMINGDALE, JOSEPH B.,

\*Deceased.

BLOSS, JAMES O.,  
 BOETTGER, H. W.,  
 BOGERT, EDWARD C.,  
 BOGERT, EDWARD LANGDON,  
 BOISSEVAIN, G. L.,  
 BOLTON, JOHN W.,  
 BOLTON, THOMAS, JR.,  
 BOND, ALFRED H.,  
 BONNER, G. T.,  
 BONNER, MRS. PAUL R.,  
 BORGSTEDT, JOHN G.,  
 BORLAND, J. NELSON,  
 BORLAND, WILLIAM G.,  
 BORNE, JOHN E.,  
 BOSTWICK, ALBERT C.,  
 BOTELER, ELIJAH S.,  
 BOWDOIN, TEMPLE,  
 BOWEN, CLARENCE WINTHROP,  
 BOWERS, JOHN M.,  
 BRADFORD, J. H.,  
 BRADLEY, EDSON,  
 BRADLEY, J. R.,  
 BRADY, MRS. J. R.,  
 BRADY, NICHOLAS F.,  
 BRAINERD, IRA H.,  
 BRAND, OSCAR J.,  
 BRANDRETH, COURTENAY,  
 BRANDT, JOSEPH F.,  
 BRANSOM, PAUL,  
 BRAUN, FREDERICK,  
 BREIDENBACH, CHARLES M.,  
 BREWSTER, MRS. BENJAMIN,  
 BREWSTER, GEORGE S.,  
 BRICE, MISS KATE,  
 BRINCKERHOFF, ELBERT A.,  
 BRISTOL, JOHN I. D.,  
 BRISTOW, WILLIAM B.,  
 BROCKE, RUDOLF,  
 BRODMERKEL, CHARLES,  
 BRONSON, DR. EDWARD BENNET,  
 BRONSON, MAYHEW W.,  
 BROWN, HON. ADDISON,  
 BROWN, CHARLES F.,  
 BROWN, DICKSON Q.,  
 BROWN, FRANKLIN Q.,  
 BROWN, JOHN BARKER,  
 BROWN, VERNON CARLETON,  
 BROWN, WALDRON P.,  
 BROWN, EDWIN H.,  
 BROWNING, WILLIAM H.,  
 BORNWING, J. A.,  
 BRUCKER, CARL,  
 BRYANT, DR. JOSEPH D.,  
 BRYCE, MRS. WILLIAM,  
 BUCHANAN, WILLIAM,  
 BUCKLEY, RICHARD,  
 BUCKNER, THOMAS A.,  
 BUDD, HENRY A.,  
 BUECHNER, C. FRED,

BULKLEY, EDWIN M.,  
 BULKLEY, MRS. EDWIN M.,  
 BULKLEY, L. DUNCAN,  
 BULL, CHARLES LIVINGSTON,  
 BULL, ROBERT MACLAY,  
 BULL, WILLIAM L.,  
 \*BULL, DR. WILLIAM T.,  
 BUMPUS, DR. HERMON C.,  
 BURCZACK-BALK, H. W.,  
 BURDEN, JAMES A., JR.,  
 BURGESS, EDWARD G.,  
 BURKE, B. J.,  
 BURLEIGH, GEORGE W.,  
 BURLEIGH, MRS. GEORGE W.,  
 BURNHAM, MRS. DOUGLAS W.,  
 BURR, WINTHROP,  
 BUSH, JOHN S.,  
 BUSK, FRED T.,  
 BUTLER, ARTHUR W.,  
 BUTTNER, GUSTAV,  
 BUTTS, DR. A. C., JR.,  
 CAESAR, HENRY A.,  
 CALEF, AMOS H.,  
 CALMAN, ALBERT,  
 CALMAN, HENRY L.,  
 CAMMANN, EDWARD C.,  
 CAMMANN, HENRY LORILLARD,  
 CAMMANN, HERMANN H.,  
 CAMPBELL, WILLIAM A.,  
 CANFIELD, GEORGE FOLGER,  
 CANFIELD, RICHARD A.,  
 CANNON, H. W., JR.,  
 CANNON, JAMES G.,  
 CANROBERT, A. H.,  
 CARDEZA, T. D. M.,  
 CAREY, FREDERICK F.,  
 CAREY, HENRY T.,  
 CARHART, A. SIBLEY,  
 CARPENDER, WILLIAM,  
 CARPENTER, PHILIP,  
 CARRERE, JOHN M.,  
 CARROLL, ROYAL PHELPS,  
 CARSTEN, ADOLPH C.,  
 CARSTENSEN, MRS. JOHN,  
 CASS, CHARLES ANDERSON,  
 CASTLE, E. W.,  
 CASWELL, JOHN H.,  
 CATHCART, MISS JENNIE R.,  
 CENTLIVRE, LOUIS A.,  
 CERERO, R. L.,  
 CHABOT, THEODORE J.,  
 CHAMBERS, FRANK R.,  
 CHAMPOLLION, ANDRE,  
 CHAPIN, MRS. ALFRED,  
 CHAPIN, MISS MARIA BOWEN,  
 CHAPMAN, HENRY OTIS,  
 CHAPMAN, JOHN JAY,  
 CHAUNCEY, ELIHU,  
 CHEESEMAN, ANDREW,

\*Deceased.



CHEESMAN, MRS.,  
 CHENEY, GEORGE L.,  
 CHIESEBROUGH, ROBERT A.,  
 CHICHESTER, CHARLES DARWIN,  
 CHILDS, EVERSLEY,  
 CHILDS, MRS. LEWIS P.,  
 CHILDS, WILLIAM H.,  
 CHISOLM, B. OGDEN,  
 CHISOLM, MRS. B. OGDEN,  
 CHOATE, JOSEPH K.,  
 CHUBB, PERCY,  
 CHURCH, CHARLES T.,  
 CHURCH, E. D., JR.,  
 CHURCH, FREDERIC E.,  
 CHURCH, F. S.,  
 CHURCH, THEODORE W.,  
 CLAFIN, JOHN,  
 CLARK, D. CRAWFORD,  
 CLARK, MISS EDITH G.,  
 CLARK, J. FRANCIS ALOYSIUS,  
 CLARK, J. MITCHELL,  
 CLARK, L. C.,  
 CLARK, MISS MARIAN AVERELL,  
 CLARK, W. A.,  
 CLARK, WALTER G.,  
 CLARK, WILLIAM N.,  
 CLARKE, E. A. S.,  
 CLARKE, THOMAS SHIELDS,  
 CLAUSEN, GEORGE C.,  
 CLEARY, JOHN,  
 CLEVELAND, CHARLES D.,  
 CLYDE, WILLIAM P.,  
 COCHRANE, A. W. S.,  
 COCHRANE, JOHN W.,  
 COCKEROFT, MISS E. V.,  
 COCKRAN, HON. W. BOURKE,  
 CODMAN, MRS. OGDEN,  
 COE, MRS. HENRY C.,  
 COFFIN, DANIEL M.,  
 COFFIN, WILLIAM EDWARD,  
 COLBRON, PAUL TOWNSEND,  
 COLBY, HOWARD A.,  
 COLE, EDWARD F.,  
 \*COLLIER, PETER F.,  
 COLLIER, PRICE,  
 COLLIER, MRS. R. J.,  
 COLLINS, CLARENCE LYMAN,  
 COLLINS, DR. STACY BUDD,  
 COLLINS, MISS GERTRUDE,  
 COMSTOCK, MRS. H. G.,  
 CONDON, THOMAS GERALD,  
 CONKLING, PAUL,  
 CONTENT, HARRY,  
 COOGAN, JOHN J.,  
 COOMBE, T. GORTON,  
 COOPER, THEODORE,  
 CORBIN, AUSTIN,

CORNING, C. R.,  
 CORWINE, WILLIAM R.,  
 COSTAIN, EUGENE H.,  
 COSTER, EDWARD LIVINGSTON,  
 COWDIN, WINTHROP,  
 COWLES, DAVID S.,  
 COX, CHARLES F.,  
 COX, JENNINGS S.,  
 \*COX, MARK T.,  
 CRAIGIE, ARCHIBALD WALPOLE,  
 CRAM, MRS. KATHIRINE G.,  
 CRAVATH, MRS. PAUL D.,  
 CRAWFORD, WILLIAM,  
 CRAYEN, DR. GUSTAV A.,  
 CROMWELL, FREDERIC,  
 CROMWELL, JAMES W.,  
 CROMWELL, LINCOLN,  
 CRONMEYER, ROBERT,  
 CROSS, GEORGE D.,  
 CROSS, MRS. C. VANDERBILT,  
 CROSSLEY, G. REGINALD,  
 CRICKSHANK, JAMES,  
 CURIEL, H.,  
 CURTIS, EDWARD W.,  
 CUSHING, HARRY A.,  
 CUTTER, RALPH L.,  
 CUTTING, R. FULTON,  
 CUTTING, W. BAYARD,  
 CUTTING, MRS. W. BAYARD,  
 CUYLER, MISS ELEANOR DE G.,  
 DAILEY, GRANVILLE F.,  
 DALY, MRS. MARCUS,  
 DAMON, WILLIAM E.,  
 DANA, PAUL,  
 DANA, WILLIAM B.,  
 DANNHEIMER, WILLIAM L.,  
 DARDS, CHARLES A.,  
 DAVENPORT, DR. CHARLES B.,  
 DAVENPORT, MRS. IRA,  
 DAVIDGE, WILLIAM H.,  
 DAVIES, FREDERICK M.,  
 DAVIES, J. CLARENCE,  
 DAVIES, JULIEN TAPPAN,  
 DAVIES, WILLIAM GILBERT,  
 DAVIS, DANIEL A.,  
 DAVIS, GHERARDI,  
 DAVIS, HOWLAND,  
 DAVIS, JOSEPH P.,  
 DAVIS, MORGAN,  
 DAVISON, CHARLES STEWART,  
 DAVISON, GEORGE HOWARD,  
 DAY, ARTHUR M.,  
 DAY, MRS. HENRY MILLS,  
 DEAN, DR. BASHFORD,  
 DE COPPET, HENRY,  
 DEEVES, RICHARD,  
 DE FOREST, ROBERT W.,

\*Deceased.

DEGENER, J. F.,  
 DEGOICOURIA, A. V.,  
 DE KLYN, B. F.,  
 DELAFIELD, FREDERICK P.,  
 DELAFIELD, MISS JULIA LIVINGSTON,  
 DELANO, WARREN,  
 DE LANOY, WILLIAM C.,  
 DELESKER, CHARLES,  
 DENING, L. C.,  
 DENICKE, J. B.,  
 DE RHAM, CHARLES,  
 DE RIHAM, MRS. H. CASIMIR,  
 DESPARD, WALTER D.,  
 DEVEREUX, WALTER B.,  
 DE VINNE, THEODORE LOW,  
 DEVLIN, THOMAS F.,  
 DE WITT, WILLIAM G.,  
 DEXTER, STANLEY W.,  
 DEX, ANTHONY,  
 DEYO, ROBERT E.,  
 DICK, J. HENRY,  
 DICKERSON, E. N.,  
 DIEHL, GEORGE H.,  
 DIENST, A. P.,  
 DIETZ, HENRY C.,  
 DIKE, OSCAR D.,  
 DIMOCK, GEORGE E.,  
 DITTMAR, JOHN, JR.,  
 DIXON, D. J.,  
 DIXON, DR. GEORGE A.,  
 DIXON, ROBERT NICER,  
 DODD, MISS GERTRUDE,  
 DODGE, D. STUART,  
 DODGE, MISS ELIZABETH W.,  
 DODGE, MISS GRACE H.,  
 \*DODGE, MRS. WILLIAM E.,  
 DOMINICK, H. BLANCHARD,  
 DOMMERICH, L. F.,  
 DOREMUS, F. S.,  
 DOUBLEDAY, F. N.,  
 DOUGLAS, JAMES,  
 DOUGLASS, ALFRED,  
 DOWNEY, JOHN I.,  
 \*DOWS, MRS. DAVID,  
 DOWS, MRS. DAVID, JR.,  
 DOWS, TRACY,  
 DRAKENFELD, B. FERDINAND,  
 DRAYTON, J. COLEMAN,  
 DRAZ, FRANCIS,  
 DRESSSEL, JOHN A. H.,  
 DRUMMOND, I. WYMAN,  
 DUANE, RICHARD BACHE,  
 DUBOIS, DR. MATTHEW B.,  
 DUEL, DR. ARTHUR B.,  
 DULLES, WILLIAM, JR.,  
 DUNCAN, STUART,  
 DUNCAN, W. BUTLER,

DUNDAS, RALPH WURTS,  
 DUNHAM, DR. CARROLL,  
 DUNHAM, EDWARD K.,  
 DUNHAM, MRS. G. H.,  
 DUNN, GANO S.,  
 DUNNE, EDWARD B.,  
 DURYEA, HARRY H.,  
 DURYEA, GEN. HIRAM,  
 DUTCHER, WILLIAM,  
 DWIGHT, MRS. EDMUND,  
 DWIGHT, JOHN E.,  
 EBBING, A. H.,  
 EDGAR, D.,  
 EDGAR, HERMAN L. R.,  
 EDGAR, NEWBOLD,  
 EDGELL, GEORGE S.,  
 EDMONDS, JOHN W.,  
 EGER, THEODOR G.,  
 EGERTON, M.,  
 EGGELING, OTTO,  
 EHRICH, HOWARD,  
 EICHNER, FERDINAND,  
 EIDLITZ, ROBERT JAMES,  
 ELBERS, MRS. FRITZ,  
 ELDRIDGE, FREDERICK L.,  
 ELDRIDGE, WILLIAM T.,  
 ELLIOTT, WALTER H.,  
 ELLIS, WILLIAM D.,  
 ELLIS, WILLIAM H.,  
 ELLSWORTH, DUNCAN S.,  
 ELLSWORTH, LINCOLN,  
 EMANUEL, J. H., JR.,  
 EMERY, JOHN J.,  
 EMIGH, MOTT,  
 EMMET, C. TEMPLE,  
 EMMET, MISS LYDIA F.,  
 EMMET, ROBERT TEMPLE,  
 EMMONS, WILLIAM,  
 ENDICOTT, ROBERT,  
 ENGLISH, E. M.,  
 ENO, JOHN CHESTER,  
 EPSTEAN, EDWARD,  
 ERBSLOTH, R.,  
 ERDMANN, MARTIN,  
 ERXMEYER, H. F.,  
 ETTLINGER, LOUIS,  
 EUSTIS, JOHN E.,  
 EVANS, MRS. CADWALADER,  
 EVANS, MRS. D. W.,  
 EVANS, RICHARD,  
 EVARTS, A. W.,  
 EVARTS, SHERMAN,  
 FABBRI, ALESSANDRO,  
 FABBRI, ERNESTO G.,  
 FABBRI, MRS. ERNESTO G.,  
 FAHNSTOCK, HARRIS C.,  
 FAHNSTOCK, WILLIAM,

\*Deceased.

FAIRBANKS, HENRY P.,  
 FALLON, JOHN J.,  
 FALK, GUSTAV,  
 FARGO, JAMES C.,  
 FARLIE, A.,  
 FARNHAM, PAULDING,  
 FARRELLY, T. CHARLES,  
 FARRINGTON, HARVEY,  
 FEARON, J. S.,  
 \*FELLOWES, CORNELIUS,  
 FENNELL, GEORGE W.,  
 FERGUSON, HARRY L.,  
 FERNSTROM, H.,  
 FIELD, MRS. WILLIAM H.,  
 FIELD, WILLIAM B. OSGOOD,  
 FIELD, MRS. WILLIAM OSGOOD,  
 FIELDING, HOWARD B.,  
 FISCHER, WILLIAM H.,  
 FISHER, L. G.,  
 FISK, DANIEL M.,  
 FLAGLER, HARRY HARKNESS,  
 FLEISCH, SAMUEL,  
 FLINT, AUSTIN, JR.,  
 \*FLOWER, ANSON R.,  
 FLOWER, FREDERICK S.,  
 FOHR, FRANZ,  
 FOLLETT, RICHARD E.,  
 FOOT, JAMES D.,  
 FORAN, GEORGE J.,  
 FORBACH, CHARLES,  
 FORD, MISS LESTA,  
 FORDYCE, JOHN A.,  
 FOSTER, EDWARD W.,  
 FOSTER, GIRAUD,  
 FOSTER, J. HEGEMAN,  
 FOSTER, MACOMB G.,  
 FOSTER, SCOTT,  
 FRALEY, JOHN U.,  
 FOWLER, THOMAS POWELL,  
 FRASER, ALEX. J.,  
 FRASER, ALEX. V.,  
 FRASER, MRS. GEORGE S.,  
 FRASER, MISS S. GRACE,  
 FRASER, WILLIAM C.,  
 FREEMAN, MISS GERTRUDE,  
 FREES, JOHN F.,  
 FRENCH, DR. CECIL,  
 FRENCH, DANIEL C.,  
 FRENCH, MRS. JOHN,  
 FRIED, SAMPSON,  
 FRIES, DR. HAROLD H.,  
 FRISSELL, A. S.,  
 FULDA, DR. CARL,  
 FULDA, DR. CLEMENS,  
 FULLER, CHARLES D.,  
 FULLER, MRS. EUGENE,  
 \*FULLER, HENRY D.,

FULTON, JOHN, JR.,  
 FUNKE, EDMUND A.,  
 FUTTERER, CHARLES F.,  
 GALLATIN, GOELET,  
 GANZ, ANTHONY,  
 GARRETT, JOHN W.,  
 GAUTIER, CHARLES E.,  
 GAUTIER, DUDLEY G.,  
 GAY, JOSEPH E.,  
 GEISENHEIMER, THEODORE,  
 GELBACH, DR. R. WILLIAM,  
 GEER, MRS. WALTER,  
 GERARD, MRS. JAMES W.,  
 GERLI, EMANUEL,  
 GERRISH, JOHN BROWN,  
 GERRY, PETER G.,  
 GERSTER, DR. ARPAD G.,  
 GILBERT, CLINTON,  
 GILSEY, HENRY, JR.,  
 GLAZIER, HENRY S.,  
 GLINTENKAMP, HENRY J.,  
 GLYN, W. E.,  
 GOADBY, W. H.,  
 GODDARD, FREDERIC N.,  
 GODFREY, MRS. E. D.,  
 GODWIN, MISS NORA,  
 GOEBEL, RICHARD A.,  
 GOETZ, CARL,  
 GOLL, EDWARD,  
 GOLDSCHMIDT, S. A.,  
 GOODHUE, CHARLES E.,  
 GOODHUE, MRS. S. C.,  
 GOODRIDGE, MRS. ETHEL M.,  
 GOODWIN, A. C.,  
 GOTTHELF, CHARLES,  
 GOTTHELF, HERMAN,  
 GOTTHOLD, FREDERIC,  
 GOULD, CHARLES A.,  
 GOULD, CHARLES W.,  
 GOULD, EDWIN,  
 GOULD, GEORGE H.,  
 GOULDEN, JOSEPH A.,  
 GRANT, R. S.,  
 GREEFF, ERNEST F.,  
 GREENOUGH, JOHN,  
 GREENWOOD, ISAAC J.,  
 GREER, CHARLES,  
 GREER, WILLIAM A.,  
 GREGOR, ELMER R.,  
 GRIFFIN, MRS. WILLIAM P.,  
 GRIFFITH, DANIEL J.,  
 GRIFFITH, MISS MARGARETTE E.,  
 GRIFFITH, MISS SUSAN D.,  
 GRINNELL, GEORGE BIRD,  
 GRISCOM, CLEMENT A., JR.,  
 GRISWOLD, CHESTER,  
 GROSS, FRANK,

\*Deceased.

- GUGGENHEIM, SIMON,  
 \*GULLIVER, WILLIAM C.,  
 GURNEE, WALTER S.,  
 HAENSEL, CHARLES W.,  
 HAIGHT, CHARLES S.,  
 HAINES, CHARLES D.,  
 HAINES, HENRY F.,  
 HALLOCK, CHARLES P.,  
 HALLS, WILLIAM, JR.,  
 HALSTEAD, MISS L. P.,  
 HAMERSLEY, MISS C. L.,  
 HAMERSLEY, LOUIS GORDON,  
 HAMILL, P. J.,  
 HAMILTON, MISS ADELAIDE,  
 HAMILTON, MISS ELIZABETH STEWART,  
 HAMILTON, MRS. WM. PIERSON,  
 HAMMOND, JAMES B.,  
 HAMMOND, MRS. JOHN HENRY,  
 HAMMOND, OGDEN H.,  
 HANCE, JOHN A.,  
 HANSON, PROF. HARRY D.,  
 HARBECK, CHARLES T.,  
 HARD, ANSON W.,  
 HARD, MRS. ANSON W.,  
 HARDENBERGH, T. E.,  
 HARMON, MRS. CLIFFORD,  
 HARPER, LATHROP C.,  
 HARRIMAN, MRS. J. BORDEN,  
 HARRISON, FRANCIS BURTON,  
 HARRISON, GEORGE L., JR.,  
 HARVEY, ELI,  
 HASBROUCK, C. S.,  
 HASSLACHER, JACOB,  
 HASTINGS, MRS. THOMAS,  
 HATFIELD, THOMAS F.,  
 HAUENSTEIN, LOUIS C., JR.,  
 HAVEMEYER, F. C., JR.,  
 HAVEMEYER, H. O., JR.,  
 HAVEMEYER, J. C.,  
 HAVEMEYER, T. A.,  
 HAVEN, GEORGE G., JR.,  
 HAVEN, J. WOODWARD,  
 HAVENS, ALBERT G.,  
 HAWES, MATTHEW,  
 HAYNES, WILLIAM DEFORREST,  
 HECKER, DR. ANTON J.,  
 HEDGES, JOB E.,  
 HEIDMAN, ABRAHAM,  
 HEIDMAN, E.,  
 HEIDMAN, MRS. SOPHIE,  
 \*HEINSHEIMER, L. A.,  
 HEINTZ, JOHN C.,  
 HEITEMEYER, CLEMENS,  
 HELD, DR. R. JOHNSON,  
 HENCKEN, HANCKE,  
 HENDRICKS, FRANCIS,  
 HENGSTLER, LOUIS,  
 HENNING, EMIL F.,  
 HENRIQUES, DR. H. A.,  
 HERMANN, FERDINAND,  
 HERRMAN, MRS. ESTHER,  
 HERTER, DR. CHRISTIAN A.,  
 HERZOG, LEWIS,  
 HESS, SELMAR,  
 HEUMANN, GEORGE M.,  
 HEUMANN, MICHAEL,  
 HEWITT, MRS. ABRAM S.,  
 HEWITT, HERBERT H.,  
 HEXAMER, A. P.,  
 HILL, E. B.,  
 HILL, FRANK B.,  
 HILLS, DR. ALFRED K.,  
 HILYARD, GEORGE D.,  
 HINCHMAN, WALTER,  
 HIRSCH, CHARLES S.,  
 \*HITCHCOCK, CENTER,  
 HOCHSCHILD, BERTHOLD,  
 HODENPYL, ANTON G.,  
 HOE, RICHARD M.,  
 HOE, MRS. RICHARD M.,  
 HOE, MRS. ROBERT,  
 HOFFMAN, MRS. E. A.,  
 HOGAN, WILLIAM,  
 HOGG, JAMES,  
 HOLBROOK, MRS. F. S.,  
 HOLDEN, EDWIN R.,  
 HOLDEN, GEORGE A.,  
 HOLLINS, HENRY B.,  
 \*HOLLISTER, H. H.,  
 HOLT, HENRY,  
 HOLTER, MRS. E. O.,  
 HOOLEY, EDWIN S.,  
 HOORMANN, GEORGE,  
 HOFF, M. G.,  
 HOPPIN, HAMILTON L.,  
 HOPPIN, WILLIAM W., JR.,  
 HORWOOD, G. CHARLES,  
 HOSKIER, H. C.,  
 HOWE, WIRT,  
 HOWELL, GEORGE C.,  
 HOWELL, T. A.,  
 HOWLAND, HENRY E.,  
 HOWLAND, MRS. HENRY E.,  
 HOYT, COLGATE,  
 HOYT, WALTER S.,  
 HOYT, GOOLD,  
 HOYT, MRS. JESSE,  
 HUGHES, CHARLES E.,  
 HUMPHREYS, MRS. EDWARD WALSH,  
 HUNTINGTON, REV. W. R.,  
 HUPPEL, J. CHRISTOPHER G.,  
 HUSSEY, WILLIAM H.,  
 HUSTED, MISS M. KATHARINE,  
 HUSTED, SEYMOUR L., JR.,

\*Deceased.

HUTCHINS, AUGUSTUS SCHELL,  
 HUTCHINSON, CARY T.,  
 HUTTER, KARL,  
 HUYLER, C. D.,  
 HUYLER, JOHN C.,  
 HYDE, AUGUSTUS L.,  
 HYDE, B. T. BABBITT,  
 \*HYDE, CLARENCE M.,  
 HYDE, MRS. CLARENCE M.,  
 HYDE, DR. FREDERICK E.,  
 INCHES, GEORGE B.,  
 JAMES, J. T.,  
 IRELAND, J. DE C.,  
 \*INSLEE, MRS. HELEN C.,  
 IRONS, HENRY C.,  
 IRVIN, MRS. RICHARD,  
 ISELIN, ADRIAN, JR.,  
 ISELIN, C. OLIVER,  
 ISELIN, COLUMBUS O'DONNELL,  
 ISELIN, MISS GEORGINE,  
 ISELIN, JOHN H.,  
 ISELIN, WILLIAM E.,  
 ISELIN, WILLIAM O'DONNELL,  
 ISHAM, CHARLES H.,  
 ISHAM, SAMUEL,  
 \*JACKSON, FREDERIC WENDELL,  
 JACKSON, DR. GEORGE THOMAS,  
 JACKSON, R. G.,  
 JACKSON, SAMUEL MACAULEY,  
 JACOB, LAWRENCE,  
 JACOBI, DR. A.,  
 JACOBUS, JOHN S.,  
 JACQUELIN, HERBERT T. B.,  
 JACQUELIN, JOHN H.,  
 JAMES, ARTHUR CURTISS,  
 JAMES, DR. ROBERT C.,  
 JAMES, DR. WALTER B.,  
 JANEWAY, DR. EDWARD G.,  
 JENKINS, WILLIAM B.,  
 JENNINGS, FREDERICK B.,  
 JENNINGS, PHILANDER R.,  
 JENNINGS, WALTER,  
 JESTER, CLAUDE W.,  
 JOHNSON, F. COIT,  
 JOHNSON, GUY B.,  
 JOHNSTON, J. HERBERT,  
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 JOHNSTON, WILLIAM ALLEN,  
 JOHNSTON, WILLIAM J.,  
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 JONES, MISS BEATRIX,  
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 JONES, H. BOLTON,  
 JONES, DWIGHT A.,  
 JONES, LEWIS Q.,  
 JONES, TOWNSEND,  
 JUDSON, H. I.,

KAEGBEHN, ALFRED,  
 KAEGBEHN, MISS BERTHA K.,  
 KAEGBEHN, OTTO,  
 KAHN, LOUIS,  
 KAHN, OTTO H.,  
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 KAMENA, WILLIAM L.,  
 KANE, MISS LOUISA LANGDON,  
 KAUFMANN, I.,  
 KAUTZ-EULENBERG, MISS P. R.,  
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 KELLEY, AUSTIN P.,  
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 KEPPEL, FREDERICK,  
 KEUFFEL, W. G.,  
 KIDDER, JAMES HATHAWAY,  
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 KILLAN, HENRY,  
 KIMBALL, ALFRED R.,  
 \*KING, EDWARD,  
 KING, JAMES GORE,  
 KING, MRS. LEROY,  
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 \*KING, WILLIAM F.,  
 KINNEY, MORRIS,  
 KITCHING, FRANK W.,  
 KITTEDGE, SAMUEL DANA,  
 KITZ, JOSEPH,  
 KLAU, MARC,  
 KLEE, BENJAMIN,  
 KLINE, ALFRED J.,  
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 KOESTER, CARL F.,  
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 KOGGE, A. H.,  
 KOLB, GUSTAVE F.,  
 KRISCH, GUSTAV,  
 KRUNSCHIED, C. D.,  
 KUGELMANN, CHARLES,  
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 KUNHARDT, HENRY R.,  
 KUPER, JACOB E. W.,  
 KUSER, JOHN L.,  
 KUTTROFF, ADOLF,  
 LACOMBE, HON. E. HENRY,  
 LABEW, MRS. EDWARD R.,  
 LAGAI, DR. GEORGE,  
 LAING, EDGAR H.,  
 LAMBERT, DR. ALEXANDER,

\*Deceased.

LAMBERT, DR. A. V. S.,  
 LAMBERT, DR. SAMUEL W.,  
 LAMONT, MRS. DANIEL S.,  
 LONDON, MRS. E. H.,  
 LONDON, FRANCIS G.,  
 LANE, EDWARD V. Z.,  
 LANE, JAMES WARREN,  
 LANGE, MISS CARMEN,  
 LANGE, J. D.,  
 LANGELOTH, J.,  
 LANGDON, WOODBURY G., JR.,  
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 LANGSPECHT, CARL,  
 LATTING, CHARLES P.,  
 LAUDAUER, I. N.,  
 LAWRENCE, JOHN BURLING,  
 LAWRENCE, NEWBOLD T.,  
 LAWRENCE, TOWNSEND,  
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 LEARNED, WALTER,  
 LEDOUX, DR. ALBERT R.,  
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 LEE, PROF. FREDERIC S.,  
 LEE, J. BOWERS,  
 LEE, WILLIAM H. L.,  
 LEFFERTS, MARSHALL C.,  
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 LESHIER, A. L.,  
 LETKEMANN, H. V.,  
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 LEWIS, FREDERIC ELLIOTT,  
 LEWIS, PERCY PYNE,  
 LEWIS, WADSWORTH RUSSELL,  
 LEWIS, DR. WILLIAM J.,  
 LEWISOHN, ADOLPH,  
 LIEBENAU, ALBERT,  
 LIEBERTZ, JOSEPH,  
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 \*LINDE, J. E.,  
 LITCHFIELD, E. HUBERT,  
 LITCHFIELD, EDWARD H.,  
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 LOBENSTINE, WILLIAM C.,  
 LORD, MRS. GEORGE DEFORD,  
 LOWELL, MISS CARLOTTA RUSSELL,  
 LOWELL, JAMES B.,  
 LOW, ETHELBERT IDE,  
 LUCHSINGER, JACQUES,  
 LUDLOW, REAR-ADMIRAL NICOLL,  
 LUEDER, A.,  
 LUSK, PROF. GRAHAM,  
 LUTTGEN, WALTHER,  
 LUTYE, EDWARD N.,  
 LYMAN, FRANK,  
 McALPIN, MRS. CHARLES W.,

McALPIN, GEORGE L.,  
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 McKIM, JOHN A.,  
 McKIM, LEROY,  
 McKINNEY, GLENN FORD,  
 McLEAN, JAMES,  
 McLEAN, MARSHALL,  
 McMurtry, G.,  
 McVICKAR, EDWARD,  
 MACFARLANE, WALLACE,  
 MACKEL, ADOLPH,  
 MACY, GEORGE H.,  
 MAERLENDER, EDWARD H.,  
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 MAGER, F. ROBERT,  
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 MANN, WILLIAM D'ALTON,  
 MAPES, DANIEL, JR.,  
 MAPES, ERNEST S.,  
 MARBURY, MISS ELIZABETH,  
 MARKOE, DR. J. W.,  
 MARLING, ALFRED E.,  
 MARLOR, HENRY S.,  
 MARSH, C. P.,  
 MARSHALL, CHARLES H.,  
 MARSTON, EDWIN S.,  
 MARTIN, WILLIAM R. H.,  
 MARTINEZ, MIGUEL R.,  
 MASLEN, RICHARD R.,  
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 MATTHIESSEN, MISS MARIE,  
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 MAYNARD, MRS. WALTER,  
 MEHL, HENRY,  
 MEHLTRETER, CHARLES F.,  
 MEISSNER, CARL A.,  
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 MERKEL, AUGUST,  
 MERRITT, HENRY C.,  
 MEYER, CHARLES,  
 MEYER, GEORGE W.,  
 MEYER, WILLIAM,  
 MEYROWITZ, EMIL B.,  
 MIDDLEBROOK, FREDERICK,  
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 MILBURN, JOHN G.,  
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 MILLER, ROSWELL,  
 MILLIKEN, S. M.,  
 MILLS, ABRAHAM G.,  
 MILLS, ANDREW,  
 MILLS, D. O.,

\*Deceased.

MILMINE, C. E.,  
 MITCHELL, F. KENDALL,  
 MITCHELL, WILLIAM,  
 MOFFAT, GEORGE BARCLAY,  
 MONTANT, ALPHONSE,  
 MONTGOMERY, RICHARD M.,  
 MOORE, CASIMIR DE R.,  
 MOORE, CHARLES ARTHUR, JR.,  
 MOORE, MISS FAITH,  
 MOORE, DR. JOHN W.,  
 MOORE, MISS K. T.,  
 MORANT, HARRY,  
 MORAWETZ, VICTOR,  
 MORGAN, MISS ANNE T.,  
 MORGAN, MISS C. L.,  
 MORGAN, EDWIN D.,  
 MORGAN, GEORGE E.,  
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 MORGAN, MRS. J. PIERPONT,  
 MORGAN, JUNIUS S.,  
 MORGAN, MRS. JUNIUS S.,  
 MORGAN, PROF. THOMAS H.,  
 MORRIS, DAVE H.,  
 MORRIS, FORDHAM,  
 MORRIS, JOHN JACOB,  
 MORRIS, DR. LEWIS RUTHERFURD,  
 MORRO, EDWARD,  
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 MORTIMER, RICHARD,  
 MORTON, A. L.,  
 MORTON, MRS. HENRY SAMUEL,  
 MOTT, HENRY C.,  
 MOTT, JOHN BOWEN,  
 MOTT, JORDAN L., JR.,  
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 MUEHLFELD, FRANK J.,  
 MULLER, WILLIAM,  
 MUNROE, HENRY W.,  
 MURGATROYD, JOHN,  
 MUTSCHLER, HERMAN,  
 NAEGELI, ROBERT,  
 NELSON, DR. HOWARD S.,  
 NELSON, JAMES W.,  
 NESMITH, JAMES,  
 NEUMER, FERDINAND,  
 NICHOLS, ACOSTA,  
 NICHOLS, JOHN W. T.,  
 NILES, ROBERT L.,  
 NOBLE, ALFRED,  
 NORRIE, A. LANFEAR,  
 NORTON, GEORGE F.,  
 NOYES, MRS. HENRY D.,  
 O'CONNELL, MICHAEL,  
 O'CONNOR, P. C.,  
 OGDEN, CHARLES W.,  
 OHMEIS, JOHN,  
 OLCOTT, DUDLEY, 2ND,

OLIN, MRS. STEPHEN H.,  
 OLSEN, CHARLES P.,  
 OLYPHANT, ROBERT,  
 OLYPHANT, ROBERT M.,  
 ONATIVIA, JOHN VICTOR,  
 O'Rourke, JOHN F.,  
 OSBORN, MRS. HENRY FAIRFIELD,  
 OTTERSON, ARTHUR L.,  
 OTTO, GUSTAV,  
 OUTERBRIDGE, DR. PAUL,  
 OVENS, LATHAM J.,  
 OVERTON, DR. FRANK,  
 OWEN, HENRY E.,  
 PAGANELLI, RAPHAEL,  
 PAGANELLI, T. RICHARD,  
 PAINTER, DR. H. McM.,  
 PALMER, S. S.,  
 PARKER, WINTHROP,  
 PARPART, WILLIAM E.,  
 PARSONS, EDWIN,  
 PARSONS, MRS. EDWIN,  
 PARSONS, H. DE B.,  
 PARSONS, JOHN E.,  
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 PARSONS, WILLIAM H.,  
 PARTRIDGE, EDWARD L.,  
 PASSET, AUGUST,  
 PATERSON, R. W.,  
 PATTESON, CHARLES S.,  
 PAUL, JOHN J.,  
 PAUL, W. A. O.,  
 PEABODY, STEPHEN,  
 PEARSON, F. S.,  
 PELL, STEPHEN H. P.,  
 PENDLETON, FRANCIS KEY,  
 PENFOLD, EDMUND,  
 PENFOLD, WILLIAM HALL,  
 PENNIMAN, GEORGE H.,  
 PERCIVAL, L. A. D.,  
 PERKINS, GEORGE W.,  
 PERKINS, ROBERT P.,  
 PETERS, CHARLES G.,  
 PETERS, SAMUEL T.,  
 PETERS, WILLIAM RICHMOND,  
 PFEIFFER, GEORGE,  
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 PIERREPONT, R. STUYVESANT,  
 PIERSON, GEN. J. FRED,  
 PIKE, R. W.,  
 PINCHOT, GIFFORD,  
 PITT, HENRY W.,  
 PLATT, FRANK H.,  
 PLATT, MISS MARION ERSKINE,

PLYMPTON, GILBERT M.,  
 POLESIE, MAX,  
 POLLOCK, GEORGE E.,  
 POOR, HENRY V.,  
 POPE, G. D.,  
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 PRINCE, EDWARD S.,  
 PRINCE, PROF. J. DYNELEY,  
 PROCTOR, WILLIAM,  
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 PULITZER, MRS. JOSEPH,  
 PUTNAM, WILLIAM A.,  
 PYLE, JAMES TOLMAN,  
 PYNE, MRS. M. TAYLOR,  
 PYNE, PERCY R., 2ND,  
 QUINTARD, DR. EDWARD,  
 RADFORD, HARRY V.,  
 RANDALL, FRANK E.,  
 RANDOLPH, EDMUND D.,  
 RANDOLPH, WILLIAM W.,  
 RANFT, RICHARD,  
 RAPALLO, EDWARD S.,  
 RATH, ROBERT J.,  
 RATHBORNE, RICHARD C.,  
 RAUCH, WILLIAM,  
 READ, WILLIAM A.,  
 REDMOND, MISS E.,  
 REDMOND, HENRY S.,  
 REED, CHARLES,  
 REID, OGDEN MILLS,  
 REIMER, OTTO EUGENE,  
 REINCKE, E. A.,  
 REINHARDT, GEORGE N.,  
 REMSEN, CHARLES,  
 RENNER, SAMUEL E.,  
 REYNOLDS, E. B.,  
 REYNOLDS, JAMES BRONSON,  
 RHETT, MISS FLORENCE,  
 RHINELANDER, CHARLES E.,  
 RHINELANDER, FREDERIC W.,  
 RHINELANDER, MISS SERENA,

RICHARD, EDWIN A.,  
 RICHARDS, E. O.,  
 RICHMOND, WATTS L.,  
 \*RIKER, JOHN L.,  
 RIKER, SAMUEL,  
 RIPLEY, H. DILLON,  
 RIPLEY, JULIAN A.,  
 RIPLEY, LOUIS A.,  
 RITTER, FREDERICK,  
 RIVES, GEORGE L.,  
 ROBBINS, CHANDLER,  
 ROBBINS, MRS. HELEN C.,  
 ROBERTS, MISS M. M.,  
 ROBERTSON, MRS. FANNY P.,  
 ROBERTSON, R. H.,  
 ROBINSON, EDWARD,  
 ROBINSON, ELI K.,  
 ROBINSON, G. H.,  
 ROBINSON, G. N.,  
 ROBINSON, HENRY A.,  
 ROBISON, WILLIAM,  
 ROCKWOOD, WILLIAM H.,  
 RODENBERG, WM. F.,  
 ROE, CHARLES F.,  
 ROE, FRANK O.,  
 ROE, IRVING L.,  
 ROELKER, ALFRED,  
 ROGERS, E. L.,  
 ROGERS, JAMES H.,  
 ROKENBAUGH, HENRY S.,  
 ROMAINE, W. TYSON,  
 ROOSEVELT, W. EMLEN,  
 ROOT, ELIHU,  
 ROSE, JOHN J.,  
 ROSSITER, ARTHUR W.,  
 ROSSITER, E. V. W.,  
 ROTH, FREDERICK G. R.,  
 ROTHWELL, JAMES E.,  
 ROWLAND, THOMAS,  
 RUDOLPH, JOHN J.,  
 RUNGUS, CARL,  
 RUNYON, CARMAN R.,  
 RUNYON, E. W.,  
 RUPPERT, JACOB,  
 RUPPERT, MRS. JACOB,  
 RUPERT, JUSTUS,  
 RUSSELL, ARCHIBALD D.,  
 RYAN, J. D.,  
 RYLE, ARTHUR,  
 ST. JOHN, F. L.,  
 SACKETT, MISS GERTRUDE T.,  
 SACKETT, MRS. S. E.,  
 SAENGER, CHARLES J.,  
 SAGE, JOHN H.,  
 SAGE, MRS. RUSSELL,  
 SAMPSON, CHARLES E.,  
 SANCHEZ, EDUARDO,

\*Deceased.



SANGER, MRS. RALPH,  
 SATTERLEE, MRS. H. L.,  
 SAUTER, FREDERICK,  
 SCHLAEFER, ANDREAS F.,  
 SCHLAEFER, HENRY,  
 SCHANCK, GEORGE E.,  
 SCHANG, FREDERICK,  
 SCHAUE, C. F.,  
 SCHEFER, CARL,  
 SCHIEFFELIN, MRS. H. M.,  
 SCHIEFFELIN, WILLIAM JAY,  
 SCHILLING, ROBERT H.,  
 \*SCHIRMER, GUSTAV,  
 SCHIRMER, RUDOLPH E.,  
 SCHMID, WALTER A.,  
 SCHMIDT, ADOLPH T.,  
 SCHMIDT, F. LEOPOLD,  
 SCHNEIDER, G. E.,  
 SCHNIEWIND, F.,  
 SCHOLLE, A. H.,  
 SCHRAG, CHARLES A.,  
 SCHREIBER, LOUIS,  
 SCHREYVOGEL, CHARLES,  
 SCHULTZE, CHARLES,  
 SCHULTZE, FRED,  
 SCHULTZE, JOHN S.,  
 SCHUYLER, MISS LOUISA LEE,  
 SCHWARZ, HENRY F.,  
 SCOTT, HON. FRANCIS M.,  
 SCOTT, FRANK H.,  
 SCOTT, WILLIAM,  
 SCOTT, STUART,  
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 SCRYMSE, JAMES A.,  
 SEDGWICK, ROBERT,  
 SEE, A. B.,  
 SELIGMAN, ALFRED L.,  
 SELIGMAN, JEFFERSON,  
 SENGSTACKE, WILLIAM,  
 SETON, ALFRED,  
 SEWALL, FRED. W.,  
 SEXTON, LAWRENCE E.,  
 SEYBEL, DANIEL E.,  
 SHAPIRO, D.,  
 SHARDLOW, MRS. JOSEPH,  
 SHAW, CHARLES HERBERT,  
 SHAW, JAMES G.,  
 SHEETS, DR. E. A.,  
 SHEFFIELD, JAMES R.,  
 SHIELDON, GEORGE R.,  
 SHIELDON, WILLIAM C.,  
 SHIPWAY, JOHN H.,  
 SHOEMAKER, HENRY W.,  
 SHOPE, JULIAN B.,  
 SHURTLEFF, ROSWELL MORSE,  
 SIBLEY, MRS. H. W.,  
 SICKLES, MAJ.-GEN. DANIEL E.,

SIEGEL, JACOB,  
 SILLECK, HENRY G., JR.,  
 SILLECK, MRS. HENRY G., JR.,  
 SILLIMAN, HARPER,  
 SIMPSON, JOHN W.,  
 SIMPSON, WILLIAM,  
 SKEEL, FRANK D.,  
 SKIDMORE, WILLIAM L.,  
 SLADE, FRANCIS LOUIS,  
 SMILEY, DANIEL,  
 SMILLIE, CHARLES F.,  
 SMILLIE, JAMES D.,  
 SMITH, DR. A. ALEXANDER,  
 SMITH, AUGUSTINE J.,  
 SMITH, F. M.,  
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 SMITHERS, F. S.,  
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 SPEAR, JAMES, JR.,  
 SPEDDEN, FREDERIC O.,  
 SPENCER, LORILLARD,  
 SPIEGELBERG, F.,  
 SPITZNER, GEORGE W.,  
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 SQUIBB, CHARLES F.,  
 SQUIBB, DR. EDWARD H.,  
 STAFFORD, WILLIAM FREDERICK,  
 STANDISH, MYLES,  
 STANTON, JOHN R.,  
 STARR, LOUIS MORRIS,  
 STEARNS, LOUIS,  
 STEBBINS, JAMES H.,  
 STECKER, ADAM A.,  
 STEERS, HENRY,  
 STEEVES, JOHN F.,  
 STEIL, GEORGE H.,  
 STEINBECK, EDWARD,  
 STEINMETZ, JOHN A.,  
 STEPHENS, OLIN J.,  
 STERN, ISAAC,  
 STERN, VESTY J.,  
 STEVENS, ALEXANDER H.,  
 STEVENS, FREDERIC W.,  
 STEVENS, RICHARD,  
 STEVENS, THEODOSIUS F.,  
 STEVENSON, PAUL EVE,

\*Deceased.

STEWART, JAMES,  
 STEWART, WILLIAM R.,  
 STILLMAN, MISS CHARLOTTE R.,  
 STILLMAN, JAMES A.,  
 STILLMAN, THOMAS B.,  
 STIMSON, DR. DANIEL M.,  
 STOEGER, A. T.,  
 STOKES, H. B.,  
 STONE, WALTER KING,  
 STORY, MRS. M. H.,  
 STOUT, JOSEPH S.,  
 STOW, GEORGE G.,  
 STRANGE, A. B.,  
 STRAUSS, FREDERICK,  
 STREAT, JAMES,  
 STREETER, D. D., JR.,  
 STROMBERG, GUSTAF,  
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 STURGES, MISS,  
 STURGES, HENRY C.,  
 \*STUYVESANT, RUTHERFURD,  
 SULLIVAN, MRS. JAMES,  
 SUTTON, WOODRUFF,  
 SWAN, ALDEN S.,  
 SWENSON, S. A.,  
 TABER, MISS MARY,  
 TAFT, HENRY W.,  
 TALCOTT, JAMES,  
 TALMAGE, MRS. E. T. H.,  
 TATHAM, CHARLES,  
 TATUM, A. H.,  
 TAYLOR, DWIGHT W.,  
 TAYLOR, GEORGE,  
 TAYLOR, MRS. HENRY OSBORN,  
 TAYLOR, HENRY R.,  
 TAYLOR, HERBERT C.,  
 TAYLOR, JAMES B.,  
 TAYLOR, KNOX,  
 TAYLOR, LLOYD,  
 TAYLOR, MOSES,  
 TAYLOR, STEVENSON,  
 TENNEY, C. H.,  
 TERRY, JOHN T.,  
 THACHER, MRS. GEORGE W.,  
 THACHER, THOMAS,  
 THAW, BENJAMIN,  
 THAYER, MRS. EZRA RIPLEY,  
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 THOMAS, DR. ALLEN M.,  
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 THORNE, JONATHAN,  
 THORNE, NEWBERRY D.,  
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 THORNE, W. V. S.,  
 TIETJEN, JOHN H.,  
 TIFFANY, LOUIS C.,

TILFORD, HENRY M.,  
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 TILTON, JOSEPH W.,  
 TIMKEN, J. HENRY,  
 TIMMERMAN, HENRY G.,  
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 TODD, H. H.,  
 TOLER, MRS. VIRGINIA W.,  
 TOUSEY, WILLIAM,  
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 TOWNSEND, EDWIN S.,  
 TOWNSEND, ISAAC,  
 TOWNSEND, J. HENRY,  
 TOWNSHEND, JOHN,  
 TOWS, COE DOWNING,  
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 \*TRASK, SPENCER,  
 TRAVELLI, MRS. CHARLES I.,  
 TROSTEL, FERDINAND,  
 TROSTEL, FERDINAND, JR.,  
 TROWBRIDGE, FREDERICK K.,  
 TRUAX, HON. CHARLES H.,  
 TRUEG, CHARLES J. H.,  
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 TUCKERMANN, PAUL,  
 TURNURE, MRS. ARTHUR,  
 TURNURE, GEORGE E.,  
 TWEDDELL, WILLIAM H.,  
 TWINING, E. S.,  
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 UPMANN, CARL,  
 VALENTINE, DR. WILLIAM A.,  
 VAN BEUREN, FREDERICK T., JR.,  
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 VANDERBILT, ALFRED G.,  
 VANDERPOEL, MRS. JOHN A.,  
 VAN DER SMISSEN, DR. G. J.,  
 VAN EMBURGH, D. B.,  
 VAN NEST, MRS. ALEXANDER T.,  
 VAN NEST, G. WILLETT,  
 VAN NORDEN, THEODORE LANGDON,  
 VAN NORDEN, WARNER M.,  
 VAN NOSTRAND, B. T.,  
 VAN SINDEREN, HOWARD,  
 VAN WINKLE, EDGAR B.,  
 VAN WYCK, WILLIAM,  
 VECCHIO, LOUIS,  
 VICTOR, A.,  
 VIETOR, THOMAS F.,  
 VINCENT, FRANK,  
 VOGEL, HERMAN,  
 VON DREELE, WILLIAM H.,  
 VORBURGER, EUGENE,  
 WADDINGTON, GEORGE,  
 WADSWORTH, W. P.,  
 WAGNER, OTTO,

\*Deceased.

WAGNER, H. WILLIAM C.,  
 WAGSTAFF, C. DU BOIS,  
 WAINWRIGHT, J. HOWARD,  
 WALCOTT, FREDERIC C.,  
 WALES, EDWARD H.,  
 WALKER, GEORGE L.,  
 WALKER, GEORGE W.,  
 WALLER, ROBERT, JR.,  
 WALSH, SAMUEL A.,  
 WALTER, EDGAR,  
 WALTER, F. E.,  
 WALTER, MARTIN,  
 WANNINGER, CHARLES,  
 WARBURG, PAUL M.,  
 WARD, ARTEMAS,  
 WARD, MRS. GEORGE CABOT,  
 WARD, HENRY C.,  
 WARD, J. Q. A.,  
 WARDNER, HENRY STEELE,  
 WARDWELL, ALLEN,  
 WARDWELL, WILLIAM T.,  
 WARREN, MRS. J. HOBART,  
 WARREN, LLOYD,  
 WATERBURY, JOHN I.,  
 WATSON, CHARLES F.,  
 WATSON, REV. J. HENRY,  
 WEATHERBEE, EDWIN H.,  
 WEAVER, R. H.,  
 WEBER, DR. LEONARD,  
 WEBB, F. EGERTON,  
 WEBB, DR. W. SEWARD,  
 WEBER, CHARLES,  
 WEEKS, JAMES,  
 WEITHMANN, JULIUS,  
 WELLS, OLIVER J.,  
 WENDELL, EVERT JANSEN,  
 WENDELL, GORDON,  
 WENDELL, MRS. JACOB,  
 WERTHEIM, H. P.,  
 WESTOVER, M. F.,  
 WETMORE, EDMUND,  
 WETTLAUFER, OTTO C., JR.,  
 WHEELER, EVERETT P.,  
 WHELOCK, MRS. G. G.,  
 WHITE, ALAIN C.,  
 WHITE, HORACE,  
 WHITE, JOHN JAY, JR.,  
 WHITE, LEONARD D.,  
 WHITE, S. V.,  
 WHITE, WILLIAM W.,  
 WHITEHOUSE, J. HENRY,  
 WHITEHOUSE, WILLIAM F.,  
 WHITING, DR. CHARLES A.,  
 WHITING, MISS GERTRUDE,

WHITING, GILES,  
 WHITMAN, CLARENCE,  
 WHITMAN, WILLIAM, JR.,  
 WHITNEY, MISS DOROTHY,  
 WHITNEY, MISS E. C.,  
 WHITRIDGE, F. W.,  
 WICKERSHAM, GEORGE W.,  
 WIENER, FELIX F.,  
 WILKINS, F. H.,  
 WILLETS, JOHN T.,  
 WILLIAMS, MRS. G. G.,  
 WILLIAMS, RICHARD H., JR.,  
 WILLIAMS, MRS. PERCY H.,  
 WILLIAMS, THOMAS,  
 WILLIAMS, WALDRON,  
 WILLOUGHBY, MISS MARY CAREW,  
 WILLS, CHARLES T.,  
 WILSON, PROF. EDMUND B.,  
 WILSON, GEORGE T.,  
 WILSON, HENRY R.,  
 WILTSEE, ERNEST,  
 WINANT, FREDERICK,  
 WINCKELBACH, L. O.,  
 WINTHROP, EGERTON L.,  
 WINTHROP, EGERTON L., JR.,  
 WINTHROP, MRS. EGERTON L., JR.,  
 WINTHROP, ROBERT DUDLEY,  
 WISLOH, JOHN G.,  
 WISLOH, THEODORE W.,  
 WISNER, CHARLES,  
 WITHERBEE, FRANK S.,  
 WITTHAUS, DR. RUDOLPH A.,  
 WOLFF, EMIL,  
 WOOD, ARNOLD,  
 WOOD, GILBERT CONGDON,  
 WOOD, J. WALTER,  
 WOOD, WILLIAM CONGDON,  
 WOODCOCK, EDWIN,  
 WOODHOUSE, J. S.,  
 WOODRUFF, ALBERT C.,  
 WOODWARD, JAMES T.,  
 WORCESTER, WILFRED J.,  
 WRIGHT, J. DUNBAR,  
 WRIGHT, MRS. J. HOOD,  
 WRIGHT, JOHN HOWARD,  
 WRIGHT, MRS. MABEL OSGOOD,  
 WYCKOFF, DR. PETER BROWN,  
 YOUNG, A. MURRAY,  
 YOUNG, GEORGE W.,  
 YOUNG, JOHN ALVIN,  
 YOUNG, JOHN W.,  
 ZABRISKIE, ANDREW C.,  
 ZANG, CHARLES,  
 ZINSSER, AUGUST.

### Corresponding Members.

GILFEDDER, T. P.,

JOHNSTON, SIR HARRY H.

**Summary of Membership.**

Benefactors .....	1
Founders in Perpetuity.....	3
Founders .....	23
Associate Founders .....	12
Patrons .....	36
Life Members .....	201
Annual Members .....	1,474
Corresponding and Honorary Members.....	14
	<hr/>
	1,764

**Qualifications for Regular Membership.**

Annual Members .....	\$ 10	Associate Founders ...	\$ 2,500
Life Members .....	200	Founders .....	5,000
Patrons .....	1,000	Founder in Perpetuity.	10,000
Benefactor .....	\$25,000		

**Form of Request.**

*I do hereby give and bequeath to the "NEW YORK ZOOLOGICAL SOCIETY," of the City of New York,*





MUSK-OX: YOUNG FEMALE.  
From Melville Island.

# REPORT OF THE EXECUTIVE COMMITTEE

TO THE BOARD OF MANAGERS

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WITH this year closes the first period of the Zoological Park development, and from now on the work of the Society will be, to an ever increasing degree, in the direction of the remaining objects of the Society. Briefly stated, those objects are, scientific work in connection with the collections, and the protection and preservation of our native fauna.

The year 1909 has not been signalized by any dramatic events, but the Park and the Aquarium have shown a steady and very satisfactory improvement.

The Endowment Fund has at last become an established fact, and the first bequest has been received and placed therein. This most appropriately comes from the family of a member of the Executive Committee, Mr. Samuel Thorne, his sister, the late Miss Phoebe Anna Thorne having bequeathed \$10,000 for this purpose. There has been received a bequest of \$100 from the Estate of Marguerite Carter, and an additional bequest is expected from the Estate of Mrs. Helen C. Inslee of \$5,000, contingent, however, upon two life interests.

It is the intention of the Committee to immediately raise a fund of \$350,000, and as a beginning, several members of the Board of Managers have already signified their intention of being one of twenty to donate \$5,000, each, for this purpose. An Endowment Fund has now become a necessity, in order to render permanent the work of the Society, and secure the continuance of the exhibits at the Park and at the Aquarium; to enable the Society to carry out scientific investigation and publish the results of researches already made, and also to engage on a large scale in the conservation movement for the protection of the land and marine fauna of North America. Owing to the policy of the Executive Committee in keeping expenditures within our known resources the Society is in sound financial condition, but many opportunities for investigation are now being neglected owing to lack of funds.

The Hudson-Fulton Celebration did not affect us materially, as the Park was remote from the main center of interest. The

Hudson-Fulton Committee made no appropriations for our expenses, and the Society had to expend its own funds for decorations on that occasion.

Several important gifts have been received for special purposes, the most notable being that of Colonel Anthony R. Kuser for \$60,000, for research into the life history of the pheasants, and the publication of an illustrated monograph on this subject, all of which will be referred to later.

The chief work for game protection during the past year, took the form of the special *Wild Life Preservation Number* of the Zoological Society *Bulletin*, published in June, 1909. This *Bulletin* has been given wide circulation, and we believe has tended to materially strengthen public opinion on the question of conservation of wild life. No other work along these lines was attempted, owing to lack of funds, but our Director of the Zoological Park, as President of the American Bison Society, has been instrumental in establishing a new national bison range and herd on the Flathead Indian Reservation in Montana. This range and herd are now accomplished facts. The latter includes thirty-seven head of bison, all of pure blood, and in fine condition. They were presented by the American Bison Society to the Federal Government. This herd, with that of the Wichita Bison Range, which was presented to the Government by this Society, and the bison herd in the Yellowstone National Park is sufficient to insure the continued existence of this noble animal, indefinitely. Dr. Hornaday and Mr. John M. Phillips, of Pittsburgh, are entitled to the credit of the establishment in British Columbia of the Goat Mountain Park game preserve, 450 square miles in extent.

Our zoological researches have suffered severely from insufficient resources; and the remarkable studies of Mr. M. E. Haggerty on "Imitation in Monkeys" were reluctantly discontinued owing to the lack of funds.

Mr. Beebe's expedition to South America resulted in five numbers of *Zoologica*, as follows:—"Ecology of the Hoatzin," "Ornithological Reconnaissance of North Eastern Venezuela," "New Species of Insects," "Racket Formation in the Tail-feathers of the Motmot," and "Three Cases of Supernumerary Toes Among Hawks." All these reflect great credit on the Society, and on the author. Scientific work of this character will hereafter receive more attention and support.

Both the Zoological Park and the Aquarium have continued to develop in popularity. During the year 1909, 1,614,953 have



visited the Zoological Park, while the attendance at the Aquarium reached the extraordinary total of 3,803,501, an increase for the Park of 201,276, and for the Aquarium of 1,267,354, over 1908. This attendance at the Aquarium probably places it in the van of the leading popular educational institutions in New York, by something over half a million. The net cost to the city for providing admission to these two institutions under control of the Zoological Society, is about three and three-quarter cents for each visitor.

The membership of the Society on January 1, 1910, showing a substantial increase over 1908, was as follows:—

Benefactors and Founders.....	26
Associate Founders .....	12
Patrons .....	37
Life Members .....	201
Annual Members .....	1,474
Corresponding and Honorary Members.....	14
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Total for 1909.....	1,764
Total for 1908.....	1,678
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Increase .....	86

#### FINANCES.

*Animal Fund.*—The receipts for the Animal Fund have been as follows:—

Special subscriptions .....	\$1,175.00
Received from sales of animals.....	1,943.00
Received from Park privileges.....	23,381.18
Balance from the year 1908.....	13,218.75
<hr/>	
Total receipts .....	\$39,717.93
Expended for animals during 1909.....	19,856.68
<hr/>	
Balance .....	\$19,861.25

*Income Account.*—The income received from Annual Members during 1909 amounted to \$12,918.20. The total amount of expenses chargeable against this fund, which is practically the only free money that the Society has, was \$20,016.66. The Society was again obliged to add the Life Membership fees received during the year to this fund, in order to keep a safe balance. To it was also added the unexpended portion of the special

fund of \$10,000 raised during 1908 among the members of the Board of Managers, and also the \$4,000 received from Sustaining Memberships for 1909.

Pending the creation of an Endowment Fund, the Executive Committee thought it wise to secure one hundred Sustaining Members, each paying \$40 annually for five years, thus adding \$4,000 each year to the Income Account. Before the expiration of five years, the Committee hopes to have an income from an Endowment Fund, sufficient, when added to the regular dues of the membership, to meet the heavy demands on this fund.

Herewith follows a list of the Sustaining Members to January 1, 1910, amounting in all to one hundred:—

#### SUSTAINING MEMBERS.

Archbold, John D.	Fraser, Miss S. Grace
Auchincloss, Hugh D.	Goodrich, Ethel M.
Avery, Samuel P.	Goodwin, James J.
Baker, George F.	Gould, Helen M.
Barbour, William	Grant, Madison
Barhydt, Mrs. P. Hackley	Hamilton, Wm. Pierson
Barnes, Miss Cora	Harkness, E. S.
Barnes, Jr., J. Sanford	Harkness, Mrs. Stephen V.
Barnes, John S.	Havemeyer, Jr., F. C.
Barney, James W.	Havemeyer, T. A.
Blair, C. Ledyard	Hill, James J.
Blodgett, William T.	Hoe, Richard M.
Bowdoin, G. S.	Hoe, Mrs. Richard M.
Bowdoin, Temple	Hopkins, George B.
Burr, Winthrop	Hyde, Mrs. Clarence M.
Cadwalader, John L.	Iselin, Jr., Adrian
Canfield, Richard A.	James, Arthur Curtiss
Carnegie, Andrew	Jennings, O. G.
Chisholm, Hugh J.	Kahn, Otto H.
Clark, George C.	Langdon, Woodbury G.
Crimmins, John D.	Lounsbery, R. P.
de Milhau, Louis J.	McMillin, Emerson
Dick, J. Henry	Marling, Alfred E.
Dieterich, C. F.	Maxwell, Robert
Dodge, Cleveland H.	Mills, Ogden
Dunham, Edward K.	Morgan, J. P.
Emmet, C. Temple	Morgan, Jr., J. P.
Field, Mrs. Wm. B. Osgood	Morton, Levi P.
Ford, James B.	Niles, W. W.

Osborn, Henry Fairfield  
 Osborn, William C.  
 Penfold, William Hall  
 Perkins, George W.  
 Phipps, Henry  
 Phoenix, Lloyd  
 Pierce, Henry Clay  
 Porter, Clarence  
 Pyne, M. Taylor  
 Pyne, Percy R.  
 Pyne, Percy R.,  
     10 memberships  
 Robinson, Nelson  
 Schermerhorn, F. A.  
 Schiff, Jacob H.  
 Schiff, Mortimer L.  
 Schley, Grant B.

Schuyler, Mrs. Philip  
 Sloane, William D.  
 Stetson, Francis L.  
 Stewart, Lispenard  
 Sturgis, Frank K.  
 Thompson, Mrs. Fred'k F.  
 Thompson, Lewis S.  
 Thorne, Samuel  
 Vanderbilt, Alfred G.  
 Vanderbilt, W. K.  
 von Post, H. C.  
 Wadsworth, W. A.  
 Warren, Samuel D.  
 White, Jr., John J.  
 Whitney, H. P.  
 Whitney, Payne  
 Winthrop, Egerton L.

The Committee asks for twenty-five additional Sustaining Members, the first payment being due in 1910. The Committee calls attention to the fact that Sustaining Members have the right to designate a Life Member upon the completion of the payments.

*General Fund.*—The small balance of \$207.80 to the credit of the General Fund will be transferred to the Endowment Fund and this account closed.

*Endowment Fund.*—The condition of the Endowment Fund on January 1, 1910, was as follows:\*

Bequest of \$5,000 due from the Estate of Mrs. Helen C. Insee and conditioned upon two lives.

Bequest of \$100 (paid) from the Estate of Mrs. Marguerite Carter.

Bequest of \$10,000 (paid) from the Estate of the late Miss Phoebe Anna Thorne.

The Charter of the Society limits its income to be derived from real and personal property to an amount not exceeding \$50,000 per annum. It is obvious that this will be inadequate if we succeed in securing anything like the Endowment Fund needed, so the Legislature will be asked during the coming year

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\*Since that date several important subscriptions have been received, all of which will be reported upon in the May *Bulletin*.

to strike out this provision in the charter, and to allow other amendments broadening the powers of the Society. .

*Ground Improvement Fund.*—On January 1, 1909, there was a balance to the credit of the Ground Improvement Fund of \$71,222.24, and early in the year \$10,000 was provided by the City for the express purpose of furnishing the Administration Building. In the last days of December, another appropriation of \$115,000 was made, but one of the last acts of Mayor McClellan was to veto this appropriation, not on its merits, but to leave this issue of corporate stock, along with many other matters, to the incoming Board of Estimate and Apportionment.

*Stokes' Bird Fund.*—The Stokes' Bird Fund, established by Miss Caroline Phelps Stokes for the protection of bird life, showed a balance on January 1, 1910, of \$5,203.89. The income from this fund will be annually expended for the protection of birds by the dissemination of proper literature, and by other measures. The proceeds of this fund, although small in amount, have already been productive of substantial results in the protection of wild life, and it is hoped that the fund will be augmented by other donations for similar purposes.

*Maintenance of the Zoological Park.*—The amount of Maintenance provided by the City for the Park during 1909, viz:—\$162,325—was barely sufficient to maintain the Park. The high standard of cleanliness and order maintained there, probably higher than that of any other public park in this country, has proved a serious drain on this fund. The Society asked for a much larger appropriation for 1910, but received only an advance of \$5,307, which must be used for additional attendants and food for the new collections. It is to be hoped that for the year 1911, a substantial increase will be provided, sufficient to enable the Committee to more adequately recompense some of the scientific staff and helpers, who are at present greatly underpaid.

*Maintenance of the Aquarium.*—The Maintenance of the Aquarium for 1909, viz.—\$46,000, is absolutely insufficient. The saving in coal, amounting to over \$1,000 during 1909, brought about by the new system of water supply, enabled the Society to escape the necessity of meeting a deficit, but the needs of the Aquarium have far outgrown this meagre allowance. It is absolutely necessary to have in the immediate future a substantial increase.

In this connection it might be stated that under the present law, the City can provide for the maintenance of the Aquarium up to \$50,000 per annum. The Legislature will be requested this year, to change this provision by striking it out altogether. The enormous attendance at this popular institution makes additional attendants and equipment an imperative necessity.

*Aquarium Improvement Fund.*—A balance of only \$530.25 remains in this fund. The sum of \$5,000 has been received from the City as a Special Improvement Fund for a new roof. The contract has been awarded and the work started.

Detailed statements of the above accounts are set forth in the Treasurer's reports on page 55.

#### LIBRARY FOR THE PARK.

A fund for the purchase of a library is required, and \$20,000 must be made available for this purpose. Towards this amount Mr. Cleveland H. Dodge and Miss Helen Miller Gould have already donated \$1,000 each, and it is hoped that other special subscriptions for this purpose may soon be received. A library committee, consisting of Messrs. Madison Grant, Chairman, John S. Barnes, and William T. Hornaday, has been formed, and now that suitable quarters are provided for books in the Administration Building, the Committee intends to take up the matter of assembling a zoological library in the immediate future. Such a library has become a necessity both for the Aquarium and for the Park, and donations of works on travel, exploration, sport, and above all on vertebrate zoology, will be greatly appreciated.

#### IMPORTANT GIFTS TO THE PARK.

The most important gifts to the Park have been as follows:—Colonel Anthony R. Kuser, \$60,000, for an expedition to study pheasants in Asia and for the illustration and printing of a monograph on the subject; Mr. William Rockefeller, \$8,000, for moving the fountain from Baird Court to the Concourse; an Alaskan Brown Bear from Mr. Cleveland H. Dodge; a Sable Antelope from Miss Jean W. Simpson; two Elands and four Hangul Deer from the Duke of Bedford; a Warthog, from Messrs. E. Hubert Litchfield, Bayard Dominick, Jr., and Henry Sampson, Jr., and the gifts to the Endowment Fund, and to the Collection of Heads and Horns, referred to elsewhere in this report.

## NEW BUILDINGS AND INSTALLATIONS.

The Rockefeller Fountain is being moved at the cost of the donor, Mr. William Rockefeller, from its present location to an imposing site in the center of the Concourse. The most important new building is the Administration Building, which is nearly completed, and will be taken over by the Society during the month of February, 1910. This structure will provide proper accommodations for the Director and officers of the Society, and will be specifically a Park house for the members of the Society. It represents the first expenditure ever made by the City of New York for the convenience of the Zoological Society. Besides the executive offices it will contain the Society's zoological library, together with suitable reading rooms and various animal pictures and sculptures. The privileges of the Administration Building will greatly enhance the value of membership in the Zoological Society, and it is hoped that a substantial and much-needed increase will result. Most important of all it will house the National Collection of Heads and Horns, inaugurated some two years ago through the generosity of the Director of the Park, Dr. William T. Hornaday, and which now bids fair to be the most interesting exhibit in the Zoological Park.

## NATIONAL COLLECTION OF HEADS AND HORNS.

The National Collection has increased with great rapidity. It now contains 615 specimens, and already is nearly sufficient to fill the two galleries that have temporarily been dedicated to it in the new Administration Building. In species from Africa, Asia and Alaska, the collection is already very strong, but much remains to be done in behalf of the American Elk, Mule Deer and White-Tailed Deer.

The most noteworthy accession of the year 1909, was the very extensive collection of South African heads and horns long known to the world as the F. H. Barber Collection. It represents the work of an ardent sportsman, covering a period of nearly thirty years, and the 150 specimens include a number of *highest records*. The fund of \$3,000, for the purchase of the Barber Collection was contributed by Messrs. Lisenard Stewart, Augustus D. Schermerhorn, Frederick G. Bourne, W. D. Sloane and Charles F. Dieterich.

Other important gifts consisted of seven additional heads of large African Antelopes from George L. Harrison, Jr., of Philadelphia; Musk-Ox, Greenland Caribou and Walrus heads

from Harry Whitney; Musk-Ox and Barren-Ground Caribou heads from Captain George L. Comer; five large cases of heads and horns from Newland, Tarlton and Company, Nairobi, British East Africa; and nine heads and horns from E. Hubert Litchfield, Jr., Bayard Dominick, Jr., and Henry Sampson, Jr., of New York.

For the purpose of rendering it possible to purchase on short notice rare specimens that were very unlikely to be acquired as gifts, thirty-three sportsmen united in subscribing to a Contributor's Fund. From that very welcome fund, thirty-seven heads and horns, representing about thirty species not otherwise obtainable, have been purchased and added to the Collection.

#### PLANS FOR 1910.

Of the plans for 1910, the most important feature is the immediate construction of a Zebra House westward of the south end of Baird Court for our splendid collection of zebras and other equines. An Eagle and Vulture Aviary is also planned for the old Caribou Range to be placed directly north of the Zebra House. This has long been a necessity, owing to the increasing number of these large birds. Additional bear dens must also be provided.

The Society intends to erect a memorial gateway on Boston Road at the West Farms Entrance, and in order to do this the entrance and the approach to the ticket pavilion and Boat House will have to be readjusted to new conditions. This change is made necessary by the change in the main entrance to the Park from Pelham Avenue to West Farms caused by the Subway. The proposed gateway will commemorate the portion of the Old Boston Post Road which lies within the boundaries of the Zoological Park in an almost unchanged condition.

The difficulties with the site of the proposed new Subway Station (at this point an elevated structure) have been finally adjusted with a minimum of injury to the Park. The new station will be known, by order of the Public Service Commission, as "The Zoological Park Station."

#### ANIMAL COLLECTIONS.

A total of \$19,856.68 was spent during 1909 on the purchase of animals. The census of the mammals, birds and reptiles living in the Park on January 1, 1910, is as follows:—

	Species	Specimens
Mammals .....	254	812
Birds .....	665	2,880
Reptiles .....	198	1,308
Total .....	1,117	5,000

These figures show an increase over 1908 of 155 species and 421 specimens.

#### FORESTRY DEPARTMENT.

The principal work of this Department during 1909 was the grading and planting of the Concourse Entrance and the north end of Baird Court. Planting operations were also carried on in different parts of the Park; notably at the west approach to Baird Court, around the new Soda Pavilion, at the new Public Comfort Station and on the West Farms block.

Special attention was paid to the prevention of fires, new extinguishers being installed in several buildings, several fire drills were held, and a regular system of inspection of fire-extinguishers has been organized. An alarm whistle has been installed in the Service Yard, which, with separate signals, gives the alarm in case of the escape of an animal, or in case of fire, and has already proved invaluable on several occasions.

A crusade which was instituted by this department against the indiscriminate throwing about of refuse, especially on Saturday afternoons and Sundays when great crowds thronged the Park, has resulted in an improvement in the appearance of the Park, beyond expectation.

#### MEDICAL DEPARTMENT.

The Medical Department has devoted much time to the compilation of statistics dealing with the various diseases of our wild animals. A classification is being prepared which will be useful for various zoological collections, both public and private. The department is constantly being called upon to furnish information as to the care and treatment of diseases of wild animals in confinement, and because of our extensive records, we have been able to supply much valuable data.

There has been no serious epidemic among the animals, and except for the slightly greater mortality due to the large increase in the small mammal collections, the death rate has been very low.

The health of the large mammals continues satisfactory. Very few cases of gastro-enteritis have occurred among the



hoofed animals; the same may be said regarding tuberculosis among the primate collection. Both these diseases may be said to be now eliminated.

The increase in our collection has naturally added to the amount of time devoted to the treatment of illnesses, and less time has been available for research work.

The number of scientific institutions desiring material from our collections for research investigations is constantly increasing, and considerable valuable pathological material has been furnished and studied from a comparative standpoint.

The Biological Laboratory, the plans for which have been ready for some two years past, is now greatly needed, but it is useless to construct this building until the Society is in a financial position to supply the money necessary for the maintenance of a staff of biologists. Some portion of the expense of maintaining the laboratory might probably be borne by the City, but much of it must be met by contributions from the Society's funds. The Executive Committee expects to arrange for the construction of this building as soon as the Endowment Fund guarantees a sufficient income for the work to be done.

#### BRONX PARKWAY COMMISSION.

The Commission appointed for the preservation of the Bronx Valley from Bronx Park to Kensico Dam, has reported to the Executive Committee that they have been unable to secure from the City authorities the necessary funds to proceed. This improvement is one that will eventually come *with time*, and the delay, due to the failure of the City authorities to appreciate the importance of this work, will ultimately add greatly to the cost of acquiring the land and to the difficulty of restoring Bronx Valley to its former conditions of wild beauty.

#### OBITUARY.

The Committee reports with regret, during the past year, the death of Miss Caroline Phelps Stokes, a Founder of the Society; Mr. E. H. Harriman, an Associate Founder; Miss Phoebe Anna Thorne, a Patron; Mrs. George Lewis, a Patron. We have also lost the following Life Members:—Mrs. Henry C. Potter, Mr. E. Dwight Church, Mr. Charles F. McKim and Mr. Charles DeRham.

Among the employees of the Society we have to record the loss of the late Mr. Eben R. Sampson, for many years Chief

Clerk at the New York Aquarium. His services were long, efficient and faithful, and many of the members and officers of the Society feel that they have lost a valued friend.

#### NEW YORK AQUARIUM.

The New York Aquarium under the skillful management of the Director, Dr. Charles H. Townsend, has been greatly improved by the completion of the new salt water system.

The one overpowering fact in regard to the Aquarium has been the enormous attendance, the size of which is almost beyond belief. The figures for the year 1909 amount to 3,803,501, a daily average of 10,417, making this unquestionably the most popular scientific and educational institution in the world in point of attendance. The largest attendance for a single day was 64,795. The number of visitors for the past thirteen years now exceeds twenty-five millions.

The reservoir of stored sea water, which has now been in use eighteen months, has enabled us to maintain the salt water collections in better condition. Losses of specimens due to foul water have been eliminated from all tanks connected with the reservoir, and the keeping of marine species is easier than ever before. The life of such species in captivity has been materially lengthened, and we have now only such difficulties to deal with as are connected with the proper feeding of tropical species in a situation remote from their original habitat.

Three West Indian seals have been received; also three great leather-backed turtles, but like all other specimens of this kind they did not survive, it being impossible to induce this species to take food; three shipments of tropical fishes have been received from Bermuda. The U. S. Bureau of Fisheries supplied the Aquarium fish hatchery with fish eggs of different kinds as usual, and the hatchery was kept in operation about nine months of the year.

The enormous crowds confined in the comparatively small Aquarium building have taxed the resources of the Aquarium forces to the utmost. It has been a matter of pride with the Society, that for seven years, during which the collections have greatly increased, and the attendance from 1,700,453 to 3,803,501 per annum, that the amount allowed for maintenance, viz., \$46,000, has not been changed. The Society, however, as will be shown by the *Special Report* of the Director of the Aquarium, must now face a new and serious problem. The Aquarium must be enlarged either by doubling or trebling the number of ex-

hibits by an extension on the landward side of the present structure, preserving intact the old walls of Castle Clinton, or by erecting a small building for the accommodation of the engine and storage room on the sea wall to the south of the Aquarium, giving this additional space to large exhibition tanks and providing an outlet for the crowds; a matter now required for reasons of public safety. An additional story in this case would then be required on the north front of the Aquarium, where small aquaria for invertebrates could be exhibited, and laboratory work be done.

Such improvements, as are outlined above, are now imperative and will demand a large increase in the maintenance fund as now supplied. The Director must be supplied with at least two scientific assistants and the floor force must be enlarged to correspond with the increased attendance. This will necessitate an increase in the maintenance to at least \$65,000. Before this can be done, the law authorizing the City to provide money for the maintenance of the Aquarium must be changed, as at present \$50,000 is the maximum amount that can be appropriated by the City for this purpose.

During 1910, the Committee expects to devote more time and attention to this institution. The administration of this exhibit has reflected great credit both to the Society and the Director, and a portion of the Society's funds should henceforth be devoted to scientific work in connection with this marine exhibit. A library and publications are especially needed at the Aquarium.

#### KUSER PHEASANT EXPEDITION.

Colonel Anthony R. Kuser of Bernardsville, New Jersey, has been the first to provide for an expedition on a large scale under the auspices of the New York Zoological Society. His donation for this purpose of an amount exceeding \$60,000, the Committee hopes will mark the beginning of a new era in the Society's development. Col. Kuser, being greatly interested in pheasants, proposed to the Society to provide funds for an expedition around the world in charge of our Curator of Birds, Mr. C. William Beebe, in order that the pheasants could be studied in their home surroundings. Mr. Beebe was granted a leave of absence for eighteen months for this purpose, and sailed from New York on the 29th of December, 1909, for England and the Continent, where his preliminary investigations must be made. He will then proceed to India, China, Borneo and Japan

and study such of the pheasants as are accessible from these points. He is taking with him an artist who will make sketches and studies on the spot. With the material thus gathered, and the living specimens in the collection of Col. Kuser, illustrations, correct from a zoological standpoint and artistically beautiful, will be secured for a monograph of the greatest value. Artists of the reputation of Charles R. Knight, L. A. Fuertes and Bruce Horsefall have been engaged and are now at work.

The total cost of the expedition and of the monograph will be over \$60,000, all of which is to be provided by Col. Kuser. It is hoped that this is only the first of a series of scientific exploring expeditions which are to be sent out by the Society to remote points on the globe.

During the summer of 1909, Mr. Raymond L. Ditmars, our Curator of Reptiles and Assistant Curator of Mammals, was sent abroad to study the Zoological Gardens of Europe. This trip resulted in our obtaining some valuable new animals. Mr. Ditmars' report is published in *Bulletin* No. 36 for October, 1909.

#### PUBLICATIONS.

The publications of the Society in 1909 were as follows:—Annual Report; four regular issues of the *Bulletin* and the extra Hudson-Fulton Number, specially prepared by the Director of the Park; five numbers of *Zoologica*; a pamphlet, List of Birds of the Park, and a special report of the Director of the Aquarium, Instantaneous Color Changes of Fishes.

#### ACKNOWLEDGMENTS.

The Executive Committee again has the pleasant duty of reporting to your Board, that the relations between the Society and the City officials, both as to the Park and the Aquarium, have been in all respects extremely satisfactory. Mayor McClellan, and especially Comptroller Metz, have been sympathetic and helpful, and the thanks of the Society are again due to Park Commissioners Smith and Berry, as well as Chief Engineer Martin Schenck and Chief Clerk Ackerman, and the officials in the Park Department of the Borough of Manhattan.

Signed,

HENRY FAIRFIELD OSBORN, *President*,  
MADISON GRANT, *Chairman*,  
JOHN S. BARNES,  
PERCY R. PYNE,

SAMUEL THORNE,  
WILLIAM WHITE NILES,  
LEVI P. MORTON,  
WM. PIERSON HAMILTON.

# Treasurer's Reports.

FOR THE YEAR ENDING DECEMBER 31, 1909.

## Income Account.

Exhibit B.

Cash in Treasury, January 1, 1909..... \$6,106.54

### RECEIPTS.

#### Special Subscriptions:

John L. Cadwalader.....	\$500.00		
Levi P. Morton .....	500.00		
Cleveland H. Dodge (Library Fund).....	1,000.00		
Wm. Rockefeller (a/c moving fountain)....	2,435.87	\$4,435.87	
<hr/>			
Life Membership .....	\$3,400.00		
Annual Dues .....	12,918.20		
Sustaining Memberships .....	5,980.00		
Aquarium publications .....	19.80	22,318.00	26,753.87
<hr/>			
			\$32,860.41

### EXPENDITURES.

Employers' insurance .....	\$664.78		
Scientific research .....	322.25		
Game protection .....	6.74		
Stationery and office supplies.....	1,091.92		
Annual Report .....	1,849.06		
Miscellaneous expenses .....	1,142.63		
General office expenses.....	1,840.36		
Library .....	209.56		
Photographs and slides .....	532.91		
Treasurer's office expenses.....	742.50		
Bulletin .....	1,303.46		
Aquarium .....	198.85		
Expenses, Annual Meeting.....	577.50		
Heads, Horns and Tusks.....	1,772.45		
Secretary's salary .....	4,000.00		
Salary and expenses of librarian.....	400.00		
Zoologica .....	30.37		
Mailing circulars .....	423.48		
Audit of accounts.....	150.00		
Engineering expenses .....	103.68		
Interest .....	327.24		
Insurance .....	268.13		
Museum supplies .....	6.00		
Munzie damage suit .....	112.85		
Publications for members.....	344.06		
Hudson-Fulton decorations .....	533.32		
Aid to employees.....	60.00		
Aquarium Tablet .....	225.00		
Moving Rockefeller Fountain.....	2,860.92		
Gartland case (judgment and costs).....	311.86		
Cash balance, December 31, 1909.....		22,411.88	10,448.53
<hr/>			
			\$32,860.41

H. R. MITCHELL,  
Chief Clerk.

PERCY R. PYNE,  
Treasurer.

January 1, 1910.

**General Fund.**

## Exhibit A.

Cash in Treasury, January 1, 1909.....	\$207.80
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*No receipts.**No expenditures.*

Cash balance, December 31, 1909.....	\$207.80
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H. R. MITCHELL,  
*Chief Clerk.*

PERCY R. PYNE,  
*Treasurer.*

January 1, 1910.

**Endowment Fund.**

## Exhibit H.

## RECEIPTS.

Estate of Marguerite Carter.....	\$100.00	
Estate of Phoebe Anna Thorne.....	10,000.00	\$10,100.00

*No expenditures.*

Cash balance, December 31, 1909.....	\$10,100.00
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H. R. MITCHELL,  
*Chief Clerk.*

PERCY R. PYNE,  
*Treasurer.*

January 1, 1910.

**Stokes' Bird Fund.**

## Exhibit G.

Endowment Fund .....	\$3,000.00	
Accumulated income unexpended January 1, 1909.....	528.69	\$3,528.69

## RECEIPTS.

Caroline Phelps Stokes, Subscription to Endowment Fund.....	1,500.00
Interest on endowment.....	201.20

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\$5,229.89

## EXPENDITURES.

Preservation of Bird Life.....		26.00
Invested in Illinois Central Railway 4% Gold Bonds.....	\$5,056.46	
Cash balance available for expenditure, December 31, 1909	147.43	5,203.89

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\$5,229.89

H. R. MITCHELL,  
*Chief Clerk.*

PERCY R. PYNE,  
*Treasurer.*

January 1, 1910.

**Animal Fund.**

## Exhibit C.

Cash in Treasury, January 1, 1909..... \$13,218.75

## RECEIPTS.

*Special Subscriptions:*

Cleveland H. Dodge.....	\$325.00		
Miss Jean Walker Simpson.....	800.00		
F. A. Havemeyer.....	50.00	\$1,175.00	

*Receipts at Park:*

Admissions .....	\$9,992.75		
Checking .....	28.10		
Miscellaneous .....	160.13		
Sale of Animals.....	1,913.40		
Rent .....	70.00		
Rocking Stone Restaurant.....	2,000.00		
Privilege Account .....	11,000.00	25,194.68	26,369.68
			<hr/>
			\$39,588.43

## EXPENDITURES.

*Purchase of Animals:*

Mammals .....	\$9,974.00		
Birds .....	4,605.16		
Reptiles .....	2,395.62	\$16,974.77	
			<hr/>
Express and other charges.....		1,692.34	
Travelling and other expenses.....		1,060.07	19,727.18
Cash balance, December 31, 1909.....			19,861.25
			<hr/>
			\$39,588.43

H. R. MITCHELL,  
*Chief Clerk.*

PERCY R. PYNE,  
*Treasurer.*

January 1, 1910.

**Maintenance Fund.**

## Exhibit D.

## RECEIPTS.

Received from the City account Maintenance Appropriation of \$162,325.00 for the year.....	\$143,261.56	
Balance due from the City account of Maintenance.....	19,063.44	\$162,325.00

## EXPENDITURES.

Medical attendance, animals.....	3.50	
Ice .....	243.85	
Telephone service and tolls.....	604.37	
Office supplies and printing.....	583.08	
Horses and vehicles.....	51.00	
Uniforms and badges.....	1,086.42	
Repairs and replacements.....	1,226.83	
Electrical supplies.....	94.79	
Postage and telegraph.....	461.60	
Food for animals.....	28,331.50	
Fuel .....	8,887.36	
Drugs and medicines .....	257.42	
Surgical instruments and appliances.....	7.63	
Sand and cement.....	393.32	
General administration .....	16,594.25	
Maintenance of buildings and care of collections.....	46,194.04	
Maintenance and care of grounds.....	43,923.07	
Rubber hose .....	140.50	
Glass and glaziers' supplies.....	152.06	
Tools and hardware.....	2,395.60	
Miscellaneous supplies .....	576.60	
Office furniture and fixtures.....	453.80	
Plumbing supplies .....	599.06	
Paints and oils.....	1,867.49	
Janitors' supplies .....	461.39	
Freight and express .....	494.52	
Sanitation .....	788.47	
Lumber .....	2,753.12	
Fencing and netting .....	548.97	
Signs and labels.....	335.50	
Nursery stock and seeds.....	293.73	
Nursery supplies .....	191.76	
Electric lighting .....	936.60	
Engineering supplies .....	32.25	
Stable supplies and repairs.....	133.95	
Park baskets .....	140.60	
Medical attendance, employees.....	23.00	
Park benches .....	62.00	\$162,325.00

H. R. MITCHELL,  
*Chief Clerk.*

PERCY R. PYNE,  
*Treasurer.*

January 12, 1910.



**Ground Improvement Fund.****Exhibit E.****SHOWING STATUS OF APPROPRIATION No. 4.****RECEIPTS.**

Unexpended balance of appropriation No. 3 brought forward.....		\$4,106.42
Appropriations by Board of Estimate and Apportionment:		
Available, July, 1904.....	\$275,000.00	
Available, May, 1905.....	275,000.00	
Available, May, 1906.....	250,000.00	
Available, May, 1907.....	100,000.00	900,000.00
Premium on bonds to December 31, 1909.....		18,107.56
		<hr/> \$922,213.98

**EXPENDITURES.***Through Park Department:*

Contract, Conrad Hewitt, Pheasants' Aviary.....	\$19,546.00	
Contract, Geo. L. Walker Co., Glass Court, Bird House .....	24,199.00	
Contract, J. V. Schaefer, Jr., Co., Baird Court.....	67,000.00	
Contract, Guidone & Galardi, two toilet buildings.....	8,385.00	
Peter Kiernan, Camel House.....	2,800.00	
Contract, Wright & Son, Feed Barn.....	15,316.00	
Contract, J. J. Buckley, Public Comfort Building...	5,600.00	
Contract, Guidone & Galardi, Small Deer House.....	41,543.00	
Contract, W. Horne & Co., West Farms Entrance Pavilion .....	5,008.00	
Contract, Granite steps near Bear Dens.....	1,569.00	
Contract, J. P. Kane, cement.....	993.75	
Contract, Brown & Fleming, broken stone.....	7,437.50	
Contract, August Bans, sewer pipe.....	333.72	
Contract, D. E. Kennedy, installing electric conduit..	1,999.00	
Contract, Leslie McHarg & Co., terrace wall and plaza steps .....	4,770.00	
Contract, Guidone & Galardi, Boat House.....	34,235.00	
Contract, J. V. Schaefer, Jr., Concourse Entrance...	22,108.00	
Contract, J. V. Schaefer, Jr., Concourse and West Approach to Baird Court.....	39,407.54	
Contract, Wm. Whisten Co., Public Comfort Bldg....	16,999.00	
Contract, John H. Devlin, part of judgment on contract dated September 4, 1902, for improving existing roads .....	710.00	
Contract, F. T. Nesbit Co., Elephant House.....	149,975.00	
Contract, Kelly & Kelly, Inc., Soda Pavilion.....	7,679.00	
Contract, J. B. Malatesta, Concourse sidewalks.....	13,699.00	
Contract, J. V. Schaefer, Jr., Administration Bldg...	73,328.00	
Contract, McHarg-Barton Co., Elephant Yard fences .....	13,700.00	
Miscellaneous expenditures through Park Department .....	13,690.31	592,030.82
Carried forward .....		<hr/> \$592,030.82

Brought forward .....		\$592,030.82
<i>By the Zoological Society:</i>		
Improvements West Approach to Baird Court.....	\$1,306.92	
Refreshment Pavilion .....	87.50	
Storage shed .....	491.69	
Mountain Goat Enclosure.....	1,498.23	
Pheasants' Aviary .....	2,113.42	
Reconstruction of walks.....	17,975.72	
Forestry and planting.....	57,070.22	
Guard rails .....	7,068.74	
Ostrich and Mammal House walks and yards.....	1,757.30	
Electric conduit .....	1,680.98	
Miscellaneous ground improvement items.....	25,899.35	
Baird Court boundary and Concourse.....	9,766.82	
Small Deer House walks and yards.....	16,898.44	
North end of Baird Court.....	9,913.74	
Improvements north of Lake Agassiz.....	6,276.99	
New walks .....	20,518.84	
Southern boundary fence.....	5,060.12	
Lion House roof.....	1,400.00	
Public Comfort Station east of Bronx River.....	2,033.56	
Bird House .....	3,943.45	
Sea Lion Pool .....	2,655.64	
Buffalo Range grading and seeding.....	2,363.14	
Improvements east of Bronx River.....	1,481.04	
Excavating Lake Agassiz.....	2,615.60	
Grading Elk Range and filling pond.....	2,573.93	
Tortoise Yards .....	1,461.08	
Beaver Pond pipe line.....	2,316.73	
Maral Deer Shelter.....	294.23	
Moving Buffalo House and Corrals.....	5,918.56	
New shops .....	1,053.12	
Western Range fences.....	6,811.30	
Subway Entrance Plaza.....	11,749.66	
Restaurant steps .....	1,294.11	
Landscape Architecture .....	7,788.18	
Boston Road Public Comfort Station.....	1,431.15	
Feed Barn yard and wall.....	9,114.47	
Camel House yards and fences.....	1,630.53	
Small Deer House.....	3,791.50	
Boat House .....	5,253.12	
Flood gates .....	1,055.04	
Service Road extension.....	2,760.08	
West Farms block.....	10,303.44	
Water line to Bear Dens.....	1,163.33	
Antelope Shelter .....	1,617.44	
Concourse Entrance .....	718.24	
Elephant House walks and yards.....	10,168.49	
Elephant House .....	7,885.93	
Subway entrance .....	535.00	
Elk yards .....	3,706.30	
Zebra and Wild Horse Installation.....	1,482.80	
Reconstruction of Crematory.....	1,067.56	
Shelter, Bronxdale Landing.....	143.53	
Boston Road and Pelham Ave. boundary fences.....	428.57	307,394.87
Carried forward .....		\$899,425.69

Brought forward .....		\$899,425.69
<i>By the Zoological Society through Park Department:</i>		
Concourse Entrance .....	\$442.16	
Elephant House .....	7,714.82	
Storage shed .....	271.79	
Forestry and planting.....	830.05	
Soda Pavilion .....	1,193.10	
Electric Conduit .....	174.76	
Improvements west of Baird Court.....	410.05	
Boston Road Public Comfort Station.....	1,223.77	
Landscape Architecture .....	727.50	
Elephant House walks and yards.....	1,842.42	
Bronxdale Landing .....	27.75	
Concourse and Baird Court approach.....	515.50	
Reconstruction of walks.....	376.29	
Administration Building .....	1,833.20	
New walks .....	355.79	
Miscellaneous ground improvements .....	210.48	
Boston Road and Pelham Avenue boundary fences..	1,288.68	
Boston Road Entrance.....	250.40	19,688.51
		<hr/>
Balance available, December 31, 1909.....		3,099.78
		<hr/>
		\$922,213.98

H. R. MITCHELL.  
*Chief Clerk.*

PERCY R. PYNE.  
*Treasurer.*

January 1, 1910.

**Ground Improvement Fund.**

Exhibit F.

SHOWING STATUS OF APPROPRIATION No. 5.

## RECEIPTS.

Appropriation by Board of Estimate and Apportionment:		
Available, July, 1908.....	\$65,000.00	
Available, August, 1909.....	10,000.00	\$75,000.00
Premium on bonds to December 31, 1909.....		327.50
		<u>\$75,327.50</u>

## EXPENDITURES.

*Through the Park Department:*

Contract, H. F. English Bldg. & Con. Co., Public Comfort Building near Elephant House.....	\$10,407.00	
Miscellaneous expenditures through the Park Department .....	200.00	\$10,607.00

*By the Zoological Society through the Park Department:*

Reconstruction of walks.....	\$2,552.48	
Forestry and planting.....	7,710.44	
Elephant House yards.....	1,809.58	
Boundary fences .....	323.58	
Guard rails .....	504.31	
New walks .....	290.74	
Miscellaneous .....	829.61	
West Farms block.....	35.50	
Llama yards .....	122.52	
Axis and sika deer fences.....	362.37	
Crematory and fuel shed.....	110.24	
North end of Baird Court.....	295.58	14,946.95

*By the Zoological Society:*

Baird Court boundary and concourse.....	\$48.52	
Crematory and fuel shed.....	489.76	
Axis and sika deer fences.....	1,337.63	
Guard rails .....	1,739.79	
Boundary fences .....	3,303.58	
Elephant House walks and yards.....	1,797.94	
Forestry and planting.....	8,087.35	
Miscellaneous .....	2,826.67	
West Farms block .....	1,066.56	
New walks .....	1,020.08	
Llama yards .....	377.48	
Reconstruction of walks .....	2,385.94	
Filling Duck Aviary.....	572.10	
Boston Road Public Comfort Station.....	10.00	
North end of Baird Court.....	595.75	
Public Comfort Station near Elephant House.....	280.00	25,939.15

Balance available for expenditure, December 31, 1909....	<u>23,834.40</u>	
		<u>\$75,327.50</u>

H. R. MITCHELL,  
Chief Clerk.

PERCY R. PYNE,  
Treasurer.

January 1, 1910.

**Aquarium Improvement Fund.**

## RECEIPTS.

Balance available, Report 1908.....	\$441.57
Premium Corporate Stock.....	8.50
Premium Corporate Stock.....	61.08
*Lead-lined Pipe Co., Valves.....	19.10
	<hr/>
	\$530.25

## NO EXPENDITURES.

Balance available for Expenditure December 31, 1909.....	\$530.25
--	----------

JOHN J. ODELL,  
*Chief Bookkeeper, Department of Parks.*  
*Manhattan and Richmond.*

January 1, 1910.

\*In report for 1908, this item is charged at \$150.00 instead of \$130.90 as actually expended, making a further balance not shown in report for 1908, of \$19.10.

**Aquarium Maintenance Fund.**

## Exhibit I.

## RECEIPTS.

Received from New York City on account of Aquarium, Appropriation for 1909.....	\$46,000.00
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## EXPENDITURES.

Pay Rolls .....	\$30,413.29	
Coal .....	4,021.60	
Telephone .....	147.71	
Electric light .....	167.73	
Ice .....	72.74	
Uniforms .....	53.00	
Cartage of Debris.....	13.00	
Cartage of fishes and tanks.....	259.72	
Stationery, Books, &c.....	228.17	
Fish Food .....	2,226.55	
Live specimens .....	1,445.75	
Incidental expenses (office).....	200.00	
Furniture .....	177.59	
Alterations and repairs.....	3,497.73	
General Supplies .....	1,313.93	
Contingencies .....	606.02	
Gas .....	1,126.91	45,971.44
Balance unexpended .....		28.56
		<hr/>
		\$46,000.00

Note.—Owing to a question as to the price of ice furnished the Aquarium, a bill amounting to \$6.20 for December ice is chargeable to the above unexpended balance.

C. H. TOWNSEND,  
*Director.*

**Aquarium Alterations and Repairs.**

Revenue Bond Fund R. D. P. 1.

## RECEIPTS.

Appropriation for repairs to roof, etc..... \$5,000.00

## DISBURSEMENTS.

*Through Park Department:*

Charles Wille, contract for above repairs.....	\$4,740.00	
Henry O. Chapman, commissions.....	237.00	\$4,977.00
Balance available for expenditure.....		23.00
		<hr/> \$5,000.00

JOHN J. ODELL,

*Chief Bookkeeper, Department of Parks.  
Manhattan and Richmond.*

January 1, 1910.

## FINANCIAL STATEMENT

**National Collection of Heads and Horns**

AS OF MARCH 1ST, 1910

## RECEIPTS.

1908

Oct. 27,	Contribution, John M. Phillips.....	\$25.00
"	" J. E. Roth.....	25.00
"	" William E. Coffin.....	10.00
"	" Dr. R. L. Loughran.....	5.00
"	" Henry Fairfield Osborn.....	50.00
"	" Samuel C. Pirie.....	5.00
" 28,	" W. K. Draper.....	5.00
Nov. 5,	" Henry A. Caesar.....	5.00
"	" Langdon Gibson.....	5.00
"	" W. Frazer Gibson.....	5.00
"	" Frank Hart.....	100.00
"	" Archibald Rogers.....	5.00
"	" Thomas Rowland.....	10.00
"	" G. O. Shields.....	5.00
"	" George Shiras, 3d.....	10.00
" 14,	" Louis Maurer.....	5.00
"	" M. F. Westover.....	3.10
"	" John Jay Pierrepont.....	25.00
"	" John T. Pirie.....	5.00
"	" Townsend Lawrence.....	10.00
"	" James Weeks.....	5.00
"	" David T. Abercrombie.....	10.00
"	" Edward Russ.....	10.00
Dec. 8,	" W. H. Chase.....	5.00
"	" A. St. John Newberry.....	5.00
"	" John J. Paul.....	15.00
" 31,	" Bascom Little.....	5.00
"	" John R. Bradley.....	100.00
"	" G. M. Laughlin, Jr.....	5.00
"	" Howard Eaton.....	5.00

Carried forward ..... \$183.10

Brought forward .....	\$183.10
1909	
Jan. 6, Contribution, G. D. Pope.....	50.00
Feb. 17, George J. Gould, for the purchase of the collection of Dr. A. Donaldson Smith .....	1,800.00
“ 19, F. Augustus Schermerhorn, towards the purchase of the collection of F. H. Barber.....	1,000.00
“ Charles F. Dieterich, towards the purchase of the collection of F. H. Barber .....	250.00
“ 25, Lispenard Stewart, towards the purchase of the collection of F. H. Barber.....	500.00
Mar. 8, William D. Sloane, towards the purchase of the collection of F. H. Barber .....	250.00
“ 16, Frederick G. Bourne, towards the purchase of the collection of F. H. Barber .....	500.00
“ 24, Contribution, William R. Coe.....	25.00
“ “ Charles L. Smith .....	5.00
Oct. 9, “ R. L. Loughran .....	5.00
“ “ G. O. Shields.....	5.00
“ “ W. Frazer Gibson .....	5.00
“ 13, “ Thomas Rowland .....	10.00
“ 19, “ Henry A. Caesar.....	5.00
Nov. 8, “ Louis Maurer .....	5.00
“ 11, “ Ruthven W. Pike.....	25.00
“ 15, “ M. F. Westover .....	3.00
“ “ James Weeks .....	5.00
“ “ John T. Pirie, Jr. ....	5.00
“ “ Edward Russ .....	10.00
“ 17, “ W. H. Chase.....	5.00
“ 22, “ George Shiras, 3d .....	10.00
“ 24, “ Archibald Rogers .....	5.00
“ 26, “ John J. Paul.....	15.00
Dec. 21, “ G. M. Loughlin.....	5.00
“ 31, Interest on deposits.....	8.05
1910	
Jan. 12, Contribution, Bascom Little .....	5.00
“ “ A. St. John Newberry.....	5.00
“ 25, “ Henry Disston .....	100.00
Feb. 8, “ Dr. H. M. Beck .....	5.00
“ 23, “ H. Casimir deRham .....	2,500.00
Mar. 1, Interest on deposits, less 30c., exchange on checks.....	.91
Total receipts .....	\$7,610.06

## DISBURSEMENTS.

Stationery .....	\$3.40
Postage and telegrams.....	9.87
Miscellaneous heads and horns, and mounting.....	1,157.10
Collection, Dr. A. Donaldson Smith.....	1,800.00
“ F. H. Barber.....	2,148.00
a/c trip Wilson Potter to Newfoundland for four caribou. Permits and transportation.....	150.00
	5,568.37
Balance, March 1, 1910.....	\$2,041.69

Correct:—

MADISON GRANT,  
*Treasurer.*

Examined and approved:—

W. T. HORNADAY,  
*Curator of Collections.*

*The Audit Company*  
*of New York*

*165 Broadway*

THE CERTIFICATES OR REPORTS UPON AUDITS OR EXAMINATIONS MADE BY THE AUDIT COMPANY OF NEW YORK ARE DELIVERED TO CLIENTS WITH THE UNDERSTANDING IN EACH CASE THAT ANY ADVERTISEMENT OR PUBLICATION OF SUCH CERTIFICATES OR REPORTS, OR PUBLISHED REFERENCE THERETO SHALL BE IN A FORM TO BE APPROVED BY THE MANAGEMENT OF THIS COMPANY

Hugh D. Auchincloss, Esq., Chairman,  
 Auditing Committee,  
 New York Zoological Society  
 92 William Street,  
 New York City.

Dear Sir:

Agreeably to your request, we have audited the books and accounts of the NEW YORK ZOOLOGICAL SOCIETY, for the year ending December 31, 1909.

The results of this examination are presented, attached hereto, in nine Exhibits of Cash Receipts and Expenditures, as follows:

EXHIBIT

"A" - GENERAL FUND  
 "B" - INCOME ACCOUNT  
 "C" - ANIMAL FUND  
 "D" - MAINTENANCE FUND  
 "E" - GROUND IMPROVEMENT FUND -  
       APPROPRIATION NUMBER 4  
 "F" - GROUND IMPROVEMENT FUND -  
       APPROPRIATION NUMBER 5  
 "G" - STOKES' BIRD FUND  
 "H" - ENDOWMENT FUND  
 "I" - AQUARIUM FUND

We certify that the accompanying statements are true Exhibits of the accounts of the Society, with the exception of the expenditures shown to have been made through the Park Department. These have not been verified by us. They are presented in Exhibits "E" and "F" and amount to \$592,030.82 and \$19,682.51 as shown by the former Exhibit and \$10,607.00 and \$14,946.95 as shown by the latter.

As heretofore, the income from privileges was not confirmed in detail.

Very truly yours,

THE AUDIT COMPANY OF NEW YORK

New York,

President,

Secretary.

April 5, 1910.



NEW YORK, April 12, 1910.

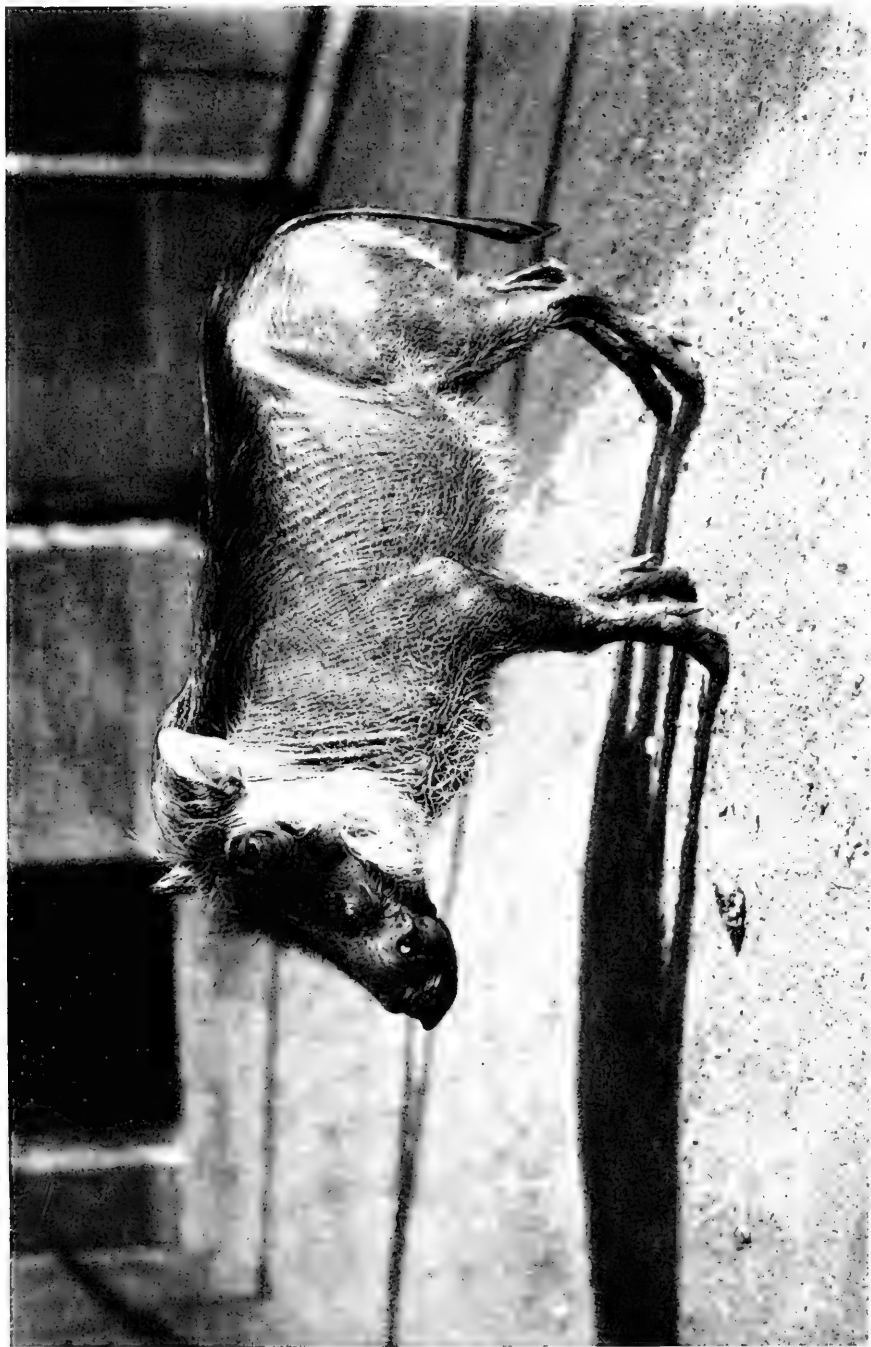
*To the President and Board of Managers of  
The New York Zoological Society:*

The undersigned, who were appoined the Auditing Committee of the New York Zoological Society for the year ending December 31, 1910, hereby report that they have examined the special audit of the books and accounts of the New York Zoological Society for the year ending December 31, 1909, made by the Audit Company of New York, and find that the report sets forth clearly the expenditures and receipts of the various accounts, and that all the accounts of the Society have been verified, except expenditures shown on Exhibits E and F of the Audit Company's report, which expenditures were made through the Park Department, the moneys not passing through the hands of the Society. These expenditures, we understand, are checked by the Comptroller, and are not verified by this audit.

Respectfully submitted,

HUGH D. AUCHINCLOSS,  
*Chairman.*

W. W. NILES,  
*Auditing Committee.*



YOUNG WARTHOG FROM BRITISH EAST AFRICA.  
Gift of E. Hubert Litchfield, Jr., Henry Sampson, Jr., and Bayard Dominick, Jr.

## REPORT OF THE DIRECTOR OF THE ZOOLOGICAL PARK

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THE ninth year of the Zoological Park will be specially remembered by the erection of the Administration Building, the first accession of four rare and important species of mammals from Africa, the Hudson-Fulton Celebration and the passage of the one-and-a-half-million mark in attendance. All along the line, the collections have been greatly strengthened. In every respect, the various activities of the Park, and their reception by the public, reached the highest points of development they have yet attained. It is to be remarked, however, that this does not apply to new building operations, or other construction; for in those lines, but little remains to be done.

### ATTENDANCE

During the year the monthly attendance of visitors, as recorded by our turnstiles, was as follows:

	1908	1909	Increase.
January .....	42,356	36,812	....
February .....	37,804	110,095	72,291
March .....	77,841	73,833	....
April .....	118,384	137,912	19,528
May .....	182,192	213,028	30,836
June .....	187,656	142,846	....
July .....	159,797	218,626	58,829
August .....	190,813	225,775	34,962
September .....	153,007	184,257	31,250
October .....	120,952	134,459	13,507
November .....	91,642	90,915	....
December .....	51,297	46,395	....
Total for the year.....	1,413,741	1,614,953	201,212

A diagram showing the increase in visitors during the past ten years appears on page 106.

The opening of the Concourse Entrance, for carriages and automobiles, has created a new stream of incoming visitors, and greatly facilitated the visits of members of the Society.

#### DEPARTMENT OF MAMMALS

William T. Hornaday, Curator; Raymond L. Ditmars, Assistant Curator.

The close of the year 1909 found us in possession of a number of new and valuable species that never before could be obtained, and also embarrassed by the presence of an overstock of hoofed animals born in the Park and yet unsold. The overstock of bears is so serious as to demand the immediate construction of a series of ten overflow dens.

The accessions of the year embraced some notable species. The first to arrive was a yearling cub Alaskan Brown Bear, from the Kobuk River, Alaska, 250 miles northeast of Nome, and only 300 miles south of Point Barrow. The well-authenticated locality of this specimen clearly establishes the once-disputed proposition that the Alaskan Brown Bear group extends not only up to the Yukon River, but also far beyond it. The specimen now in our bear collection is very large for its age, and is rapidly growing, but as yet its specific identity can not be positively determined. Naturally, its development is being observed with keen interest. It is a gift from Mr. Cleveland H. Dodge.

After ten years of continuous efforts to obtain a bear of any species from South America, at last a specimen has been secured. From the Andes of southern Colombia there came to us, after devious wanderings into obscure paths, a young Andean black bear, rather nearly related to the elusive spectacled bear of the Andes. Specifically it is to be known as *Ursus majori*, of Oldfield Thomas. In appearance, it resembles a North American black bear with a highly-arched back, very short ears set widely apart, and a whitish patch between the lower jaws. This interesting animal is at present quartered in the Small-Mammal House, pending the building of a series of emergency bear-dens that really must be provided in 1910.

Although we began the year with a very strong collection of African hoofed animals, and an Antelope House that was full to overflowing, certain opportunities for the first acquisition of rare species were too good to be lost. We received a beautiful half-grown sable antelope, (*Hippotragus niger*), as a gift from Miss Jean Walker Simpson. By many persons this is regarded as the handsomest of all the many species of African antelopes.

It is high headed, handsomely horned, statuesque in form, and its colors are glossy black and pure white.

From Charles Reiche, of Alfeld, Germany, we purchased by cable a fine adult female mountain zebra, (*Equus zebra*), from South Africa. This is now one of the rarest equines to be seen in captivity. It inhabits the mountains of Cape Colony, and the game protectors of South Africa estimate that only 400 individuals remain alive. It is smaller than the Grevy zebra, exhibited beside it, and its stripes are very broad.

A fine pair of Grant zebras was acquired by purchase in the home market, and established in the southeastern Fallow Deer Range, all the year round, as an experiment in acclimatization.

From the same source as the above, and at the same time, there came to us a half-grown male greater kudu, the first the Society ever has had an opportunity to secure. Although the animal arrived in thin condition, and throughout the European zoological gardens this species is reputed to be delicate and short-lived, up to date our specimen has satisfactorily increased in weight and stature, and is to-day in perfect health. An opportunity to purchase a female was necessarily allowed to pass because of the crowded condition of the Antelope House.

Other notable accessions during the year consisted of a pair of duiker antelopes, deposited by Colonel Theodore Roosevelt; a Tibetan kiang and four adult hangul deer, (*Cervus kashmirensis*), presented by the Duke of Bedford; a pair of Speke sitatunga, a Congo sitatunga, and a young warthog, the latter presented by Messrs. Litchfield, Sampson and Dominick.

#### ANIMALS BORN IN THE PARK

The breeding of animals never has been with us an important object, chiefly for the reason that the demands of exhibition conditions are so imperative that all other considerations must be secondary. The successful breeding and rearing of captive wild animals on any considerable scale requires special provisions to afford the seclusion and space that will insure satisfactory offspring. In the Zoological Park, our policy of keeping large exhibition herds of all the species of hoofed animals renders the margin of space available for increase very narrow, and it is easy to become overstocked. For example, we have been compelled to stop the multiplication of Malay and Indian sambar deer, and now we are so seriously overstocked with Eld's Burmese deer, Japanese sika, barasingha deer and Himalayan tahr that we must check the increase of those species until a number

can be sold. Unfortunately, the demand in this country for foreign deer is very limited. At the same time, however, we constantly offer for sale, by circular and otherwise, our stock of surplus animals, and annually sell a fair number.

The following is a list of the most noteworthy mammals born in the Park during 1909:

1 Long-Armed Baboon.	1 Grizzly Bear.
6 Black Coyotes.	7 American Elk.
6 Red Deer.	1 Hangul Deer.
4 Indian Sambar Deer.	1 Barasingha Deer.
2 Axis Deer.	5 Sika Deer.
6 Fallow Deer.	4 Eld's Deer.
2 White-Tailed Deer.	3 Hog Deer.
1 Indian Antelope.	1 Beatrix Antelope.
1 Eland.	1 Aoudad.
2 Persian Ibex.	2 Tahr.
1 Prjevalsky Wild Horse.	2 Collared Peccaries.
1 American Bison.	4 Kangaroo Rats.
6 Litters Prairie "Dogs."	1 Litter Black Rats.
1 Litter Agouti.	6 Common Opossums.

#### HEALTH OF THE ANIMALS

The losses during the year have been so unimportant that very few of them stand out with any real prominence. The most serious was the death of a newly acquired cheetah, and an adult female white mountain goat that was caught when fully grown and carrying young, and accepted as an experiment. Owing to one of Nature's own mistakes, the birth of the kid was not successful, and both mother and young lost their lives. The female Baker's roan antelope died of a combination of diseases; an old male barasingha deer with diseased eyes was chloroformed, as also was an old male sika deer. The young male African rhinoceros is obstinately refusing to grow, and although it takes its food with seeming relish, it is feared that it will, during 1910, become a loss.

The general health of the mammal collection is excellent, and the death-rate continues to be very low.

#### CENSUS FOR 1909

A full list of the mammals living in the Park on January 1, 1910, is as follows:

	Species.	Specimens.
Primates .....	36	81
Carnivora .....	73	154
Pinnipedia .....	1	3
Insectivora .....	1	2
Rodentia .....	54	242
Ungulates:		
Artiodactyla .....	62	283
Perissodactyla .....	11	16
Proboscidea .....	3	5
Hyracoidea .....	1	1
Edentata .....	3	6
Marsupialia .....	9	19
Total .....	254	812
Gain over 1909.....	37	130

## DEPARTMENT OF BIRDS.

C. William Beebe, Curator; Lee S. Crandall, Assistant.

During the past year unusually large gains have been made for the bird collection, both in species and specimens. Inasmuch as no additional houses or installations were provided, the gain made was by increasing the capacity of the present accommodations. The increase over 1908 is as follows:

Orders, 2; Species, 102; Specimens, 265.

The death-rate was as low as in preceding years, and no epidemics occurred.

The Curator spent three months in British Guiana, and with the help of his assistant, Mr. L. S. Crandall, brought back an important collection of nearly three hundred tropical birds, representing fifty-one species, thirty-three of which were new to the collection. Among the more interesting were yellow-headed vultures, marail guans, magpie tanagers, red-backed cassiques and moriche orioles.

A good-sized flock of herring gulls was presented by Mr. Edward Hatch, Jr., and a carefully planned effort will be made to establish a colony of these birds in the Zoological Park.

Early in the year two men were sent from the bird department to central New York, where a collection of one hundred winter birds, of seven species, was made. This included two species of the very rare hoary redpoll, besides many of the common and greater redpolls.

In May, Keeper Durbin spent several weeks trapping near Savannah, Georgia, and brought back an excellent collection of one hundred and fifteen birds of twenty-three species. Among other forms new to the collection were white-eyed towhees, pine, Tennessee and yellow-throated warblers, tufted titmice, brown-headed nuthatches, Carolina wrens and summer tanagers.

The extremely small expense incident to such trips makes it probable that others will be made in the future.

Of the 102 species new to the collection, added during the past year, it is possible here to call attention only to the excellent series of western desert birds, and the unusual number of rare species that are of especial interest to students of evolution. Many of these last are representatives of isolated families, or even orders, and the majority are neo-tropical in habitat.

The family *Ciconiidae*, or true storks, is represented in the new world by only three species, all of which are now living in the Zoological Park. The maguari stork, (*Euxenura maguari*, Gmel.), is represented by one specimen and is noteworthy as paralleling closely the European white stork, (*Ciconia ciconia*, Linn.), in color, but excelling it in size.

The other two American storks are the jabiru, (*Mycteria americana*, Linn.), and wood ibis, (*Tantalus loculator*, Linn.). It is better even for technical purposes to call these by their English, rather than their scientific names, as our over-zealous systematists have recently and very dexterously exchanged their Latin cognomens. The latter is a common bird, always on exhibition, but the jabiru is much rarer, and the splendid individual now in the Park is only the second one which we have been able to obtain.

The genus *Chauna* of the order Palamedeiformes is complete, both species of screamers, the black-necked, (*C. chavaria*, Linn.), and the crested, (*C. cristata*, Swains.), being in the collection.

But the most important series is of the so-called sub-orders of Gruiformes, or crane-like birds. Four of the six sub-orders are represented, the arami by the limpkin, (*Aramus giganteus*, Bonap.); *Eurypygae* by the sun-bittern, (*Eurypygae helias*, Pall.); *Psophiæ* by the common (*Psophia crepitans*, Linn.), and the white-backed trumpeter, (*P. leucoptera*, Spix.).

Finally, the only two species of *Dicholophi* are both represented in the collection, viz.: the crested (*Cariama cristata*, Linn.), and Burmeister's seriema, (*Chunga burmeisteri*, Hartl.).



Among other noteworthy species of birds may be mentioned both sexes of the harpy eagle, (*Thrasaëtus harpyia*, Linn.) ; two California condors, (*Gymnogyps californianus*, Shaw), one just shedding the last of its natal down, while the other, at the age of three years, has just acquired the fully adult head colors and gular swelling. We have the black cockatoo, (*Calyptorhynchus banksi*, Lath.) ; satin bower bird, (*Ptilonorhynchus violaceus*, Vieill.) ; and the sacred ibis, (*Ibis aethiopica*, Lath.). A pair of ocellated turkeys, (*Agriocharis ocellata*, Cuv.), just acquiring adult plumage and coloring, is perhaps the rarest species in the entire collection, and as far as we are aware our specimens are the first ever exhibited in a zoological garden or park.

During the year the Curator completed a volume on the birds of British Guiana, to be published in 1910, and prepared five additional numbers of *Zoologica*, entitled respectively, No. 2.—“Ecology of the Adult Hoatzin”; No. 3.—“A Reconnaissance of the Birds of Northeastern Venezuela”; No. 4.—“New Species of Insects Collected in British Guiana by C. William Beebe”; No. 5.—“Racket Formation in the Tail-Feathers of the Motmots”; No. 6.—“Three Cases of a Supernumerary Toe in the Broad-Winged Hawk.”

Four other papers are in course of preparation, relating to experiments on color, and observations on these will be continued during 1910, by the assistant.

To the Bird Department the most important event of the year was the gift of a fund from Mr. Anthony R. Kuser for the preparation and publication of a monograph of the *Phasianidae*. On December 29, the Curator sailed for the far east in the interest of this work. Mr. Beebe has been granted eighteen months' leave of absence, and in Asia and the East Indies he will gather materials for the monograph.

#### SUMMARY OF BIRDS LIVING IN THE ZOOLOGICAL PARK

JANUARY 1, 1910.

	Orders.	Species.	Specimens.
Rheiformes,	Rheas .....	1	1
Struthioniformes,	Ostriches .....	2	3
Casuariformes,	Emeus and Cassowaries.	3	5
Tinamiformes,	Tinamous .....	1	5
Galliformes,	Quail and Pheasants....	64	208
Hemipodii,	Hemipodes .....	1	2
Columbiformes,	Pigeons and Doves .....	46	256
Ralliformes,	Coots and Gallinules....	12	32

Sphenisciformes,	Penguins .....	1	1
Lariformes,	Gulls and Terns.....	9	67
Charadriiformes,	Plovers and Sandpipers.	11	26
Gruiformes,	Cranes, Seriemas, etc....	8	25
Ardeiformes,	Ibises, Storks and Herons	19	45
Palamedeiformes,	Screamers .....	2	4
Phoenicopteriformes,	Flamingoes .....	2	8
Anseriformes,	Swans, Geese and Ducks.	53	540
Pelecaniformes,	Cormorants and Pelicans.	8	21
Cathartidiformes,	New World Vultures....	6	17
Accipitriformes,	Hawks and Eagles; Old World Vultures .....	20	45
Strigiformes,	Owls .....	14	54
Psittaciformes,	Parrots, Macaws and Cockatoos .....	58	169
Coraciiformes,	Kingfishers and Hornbills	4	4
Trogoniformes,	Trogons .....	1	1
Cuculiformes,	Touracos and Cuckoos ..	5	23
Scansores,	Toucans .....	7	10
Piciformes,	Woodpeckers .....	5	9
Passeriformes,	Thrushes, Sparrows and all Perching Birds....	292	1,299
27 Orders .....		665	2,880
Gain over 1908 .....		102	167

## DEPARTMENT OF REPTILES

Raymond L. Ditmars, Curator; Charles E. Snyder, First Keeper.

Instead of the usual expedition into the field to add striking features to the Reptile Department, the Curator visited the animal markets of Great Britain and the Continent. London was made a general base for centering his collection, in the Gardens of the Zoological Society, and through a very diligent investigating and purchasing campaign extending over a period of six weeks, Mr. Ditmars brought together an elaborate series of reptiles, and also mammals, many of which were quite new to our collections.

Through this purchasing trip a fine series of species representing the reptilian fauna of Australia was acquired. This included five species of lizards and six species of snakes. The latter are particularly interesting, as it is the first time since the opening of the Reptile House that we have been able to ex-

hibit any of the poisonous serpents of far-distant Australia. These have been placed in a specially constructed case.

The venomous species consist of the purple death-adder, or black snake, (*Pseudechis porphyriacus*); the gray death-adder, (*Denisonia superba*), and the tiger snake, (*Brachyaspis curtus*). Of these, the purple death-adder is represented by a male specimen about three and one-half feet long, of a lustrous purplish-black color, with a row of scarlet scales on each side of the body. There are six specimens of the gray death-adder, all fully grown, and about five feet in length. The tiger snake is represented by two mature examples, each about twenty-four inches long. The latter species derives its name from the tawny bands that encircle the yellowish body. All of these serpents dilate the neck, to a moderate extent, in cobra fashion. They are vicious, highly active and very poisonous. The lot was purchased in June, and the original number remains on exhibition, without losses by death. Both species of the Australian pythons—the diamond snake, (*Morelia spilotes*), and the carpet snake, (*M. variegata*), were added to the collection.

Among species of the larger constricting snakes of the tropics that were obtained was a very beautiful specimen of the regal python, (*Python reticulatus*), from Borneo; two specimens of the Congo python, (*P. sebae*); a Madagascar boa, (*Boa madagascariensis*), and a Madagascar tree boa, (*Corallus madagascariensis*). All these were purchased from Carl Hagenbeck, at Hamburg. A thoroughly representative collection of the serpents and lizards of Europe was obtained from the animal dealers in Great Britain.

To strengthen the collection of lizards, a good series of the larger species was purchased. The most spectacular example was a huge kabara-goya, or “monitor,” (*Varanus salvator*), over seven feet long, and with claws as large as those of a leopard. Examples of the spiny-tailed lizard, (*Xonurus giganteus*), of South Africa, and the giant chameleon, (*Chamaeleo pardalis*), of Madagascar, make attractive specimens for exhibition.

Among the turtles and tortoises purchased during the trip was a series from Europe and Africa. The purchases of crocodilians were very satisfactory, inasmuch as they added to our series two very rare species. These consisted of a mature broad-headed crocodile, (*Osteolaemus tetraspis*), from Sierra Leone, and a young horned caiman, (*Caiman latirostris*), from the Amazon region.

A young Nile crocodile, (*Crocodilus niloticus*), and a Sumatran salt-water crocodile, (*C. porosus*), were among the crocodilians.

The purchases of mammals, birds and reptiles made a shipment of forty-eight cages, which were placed aboard the Atlantic Transport S. S. "Minnehaha," and left London on July 3.

In order to accommodate the ever-increasing number of the smaller lizards and serpents in our Reptile House, forty-four small cages, with sliding glass fronts, were constructed and placed in the east end of the Reptile House. Visitors are admitted to this section during the summer months only. Over fifty species of reptiles new to the collection were exhibited in this series during the past summer.

During the past year, a number of interesting births occurred in the Reptile House, a list of which is as follows:

- 20 specimens South American Boa.
- 2 litters Texas Rattlesnake.
- 1 litter Florida Diamond Rattlesnake.
- 2 litters Banded Rattlesnake.
- 8 litters Water Snakes.
- 21 litters Striped Snakes.

A full list of the reptiles living in the Park on January 1, 1910, is as follows:

	Species.	Specimens.
Chelonia .....	42	341
Crocodylia .....	7	63
Lacertilia .....	41	262
Ophidia .....	69	337
Batrachia .....	38	305
Total .....	197	1,308
Gain during year .....	15	26

The total census of the Zoological Park collections on January 1, 1910, is as follows:

#### SUMMARY OF COLLECTIONS

	Species.	Specimens.
Mammals .....	254	812
Birds .....	665	2,880
Reptiles .....	197	1,308
Total .....	1,116	5,000
Increase over 1908 .....	154	421

## NATIONAL COLLECTION OF HEADS AND HORNS

Throughout the past year, the Director found it necessary to devote a very considerable amount of time and labor to the collection of heads and horns, now being formed by the sportsmen of America and elsewhere, and which finally will form an important feature of public interest in the Zoological Park. The scope and purpose of this effort has already been set forth; and it is only necessary to add here that the chief object of the collection is to gather and preserve permanently, for the benefit of the world at large—and before it is too late—an adequate representation of the great game animals of the world. This is not only desirable, but necessary, because of the disappearance of the natural proportion of old and finely developed male individuals of many much-hunted species.

During the past year, a great number of new and highly valuable additions to the collection have been received, from many parts of the world. On January 1, 1910, the collection contained a total of 634 specimens. During the past year all of these were catalogued, all save a very few were measured, and about 500 labels, with data and measurements, were written by the Director, and printed. About forty heads were mounted, all the skulls were cleaned, and about 300 skulls and horns were mounted on shields, for hanging. Naturally, this extra work, and the superintendence of all not done by himself, consumed so much of the Director's time that the upkeep of his regular duties was rendered difficult.

As soon as this National Collection is completed, it will temporarily be arranged and hung in the two picture galleries of the Administration Building, where it will remain until a special building can be erected for it, in order that it can be thrown open to the public. Elsewhere in this volume appears a full list of the gifts made to this collection during the past year.

## THE MONTANA NATIONAL BISON RANGE AND HERD

Another matter that involved the Director in a really serious amount of extra work was the raising, by a popular subscription, of \$10,800, for the purchase, by the American Bison Society, of the bison herd that the Society had pledged itself to present to the National Government as soon as the range at Ravalli was ready to receive it. The fund was completed in May, 1909, and the fence around the bison range was finished (by the government), on October 12. Early in September it was necessary for

the Director and Mr. F. H. Kennard, of Boston, as president and vice-president of the Bison Society to go to Kalispell, Montana, where they purchased 34 pure-blood bison, from the famous Conrad herd, to constitute the nucleus of the new national herd.

The animals were safely delivered in the range at Ravalli on October 17; and thus closed the series of events that rendered the Montana National Bison Herd an accomplished fact.

The close proximity of Kalispell to the proposed Glacier National Park prompted the bison-purchase committee to make a short trip of inspection and inquiry into that wonderland of grand mountains, lakes, glaciers, fine forests and big game.

#### GROUND IMPROVEMENTS AND MAINTENANCE WORK OF THE DEPARTMENT OF FORESTRY AND CONSTRUCTION

Hermann W. Merkel, Chief Forester and Constructor.

The principal item of work in Ground Improvements during the year 1909 was the grading and planting around the Concourse at the north end of Baird Court. Plans for this were made by the Chief Forester during the winter, and approved by the Executive Committee and the Landscape Architect of the City of New York. The actual work began about April 1, and was carried out to a successful conclusion by the time the planting season was over.

This work called for a great amount of top soil, all of which had to be of sufficiently good quality to keep a large number of plants of expensive kinds in good condition. Altogether, two thousand cubic yards of soil were used, the most of which we were able to purchase for about twelve and a half cents per yard, by taking the utmost advantage of excavation and grading work outside the Park.

The plants were purchased from various nurseries in New York, the New England States, Pennsylvania, Ohio and North Carolina. They represent an outlay of about \$4,000.00, and an endless amount of inspection and bargaining on the part of the Chief Forester. A careful watch was kept, both in the nurseries and in the Park, for any trace of such noxious insects as the brown-tail and gypsy moth, or dangerous scale insects.

Very little additional work remains to be done at the Concourse. It is generally conceded that this work more than justifies the outlay of time and money devoted to it, and that in a few years, when the new plants have attained good growth, we will

have in it the finest park entrance in the city, if not in the entire country.

Simultaneously with this work, other planting operations of less importance were carried on around the west approach of Baird Court and the new Soda Pavilion, at the new Public Comfort Station, on the West Farms Block and on the east bank of the river, at the extreme south end of the park.

The grading, paving and tarring of the Elephant House walks and yards was taken in hand as soon as the weather became suitable, and finished by June 15th. It is worthy of note that in order to save the roots of several fine forest oaks, a large portion of one yard and two sections of walk were constructed of concrete, raised upon concrete piers. This work has proven quite satisfactory.

New walks were built from the Jungle Walk to the Concourse; from the Beaver Valley Walk to the Elephant House, and from the Concourse to the Flying Cage.

In the reconstruction of walks, more work was done than in any previous year. The Beaver Valley Walk, the Bear Den Walk, Buffalo Walk, the walks around the Antelope House and a large portion of the Service Road were re-graded and covered with our tar-macadam surface. These improvements brought our system of mud-and-dust-free walks up to a high state of excellence. A portion of Baird Court was re-surfaced.

Two new drinking-fountains were set, one at the Antelope House, and one at the Bronxdale end of the walk along the east bank of the Bronx River. This makes seven fountains now in use in the Park.

A new sewer line of six-inch vitrified pipe was built to the new Soda Pavilion.

New boundary fences, to the extent of 4,700 feet, were built along the Boston Road, along Pelham Parkway, and between the Southern Boulevard and 182nd Street. The fence along the Boston Road was built with a new style of overhang, of barbed wire, which renders it practically unclimbable. All the new fences have been built over concrete foundations, thus making the whole Park thoroughly dog-proof, and at the same time increasing the duration of the fences.

Of ranges, the Axis Deer and Japanese Sika Deer were supplied with new fences on 3" x 3" steel T-posts, and several division fences were built between the Llama House and Elk Ranges. The corrals at the Llama House were all re-surfaced, and greatly improved.

The spaces between the outdoor cages of the Lion House and Primate House and their respective guard rails, were concreted, and they are now for the first time in such a condition that they can be easily and thoroughly cleaned. Besides this, the concrete imparts a finished appearance to the buildings.

Advantage was taken of the building of a new railroad in the vicinity of the Park to remodel the water-courses of the Duck Aviary with good, solid fill, reducing the water areas, and causing a constant stream to flow through them. This work has much improved the condition of the water.

At last the crematory at the Nursery is suitably housed, in a concrete building, making this feature available for winter use.

A series of model pig-pens was built at the Nursery. These were called for by the Reptile Department, as a measure of economy in providing the favorite food of the large pythons,—freshly killed suckling pigs, under thirty pounds in weight. The cost of purchasing such food was so great that it was imperatively necessary to produce it by more economical methods.

#### MAINTENANCE AND REPAIRS

The ever increasing amount of maintenance and repair work often threatens to overwhelm our limited force. Not only is the first series of buildings and installations beginning to show the results of hard usage, but poor contract work on such buildings as the Lion House and Bird House is constantly showing up. At this moment extensive repairs to the outside brick-work of the Lion House are greatly needed.

In the Aquatic Bird House, the western series of wall-cages was taken down and rebuilt on a base of stained concrete, which will now last for a great number of years. The same will have to be done with the centre cages and those on the east side during the coming year. The roof of this building, and those of the Lion House and Bird House, are in very poor condition, and in constant need of repairs. The whole interior of the Aquatic Bird House was repainted.

At the Primate House, all wooden sheathing was removed from the rear of the cages, doing away with harboring places for rats; and several oak panels were removed from the base of the large series of eastern cages, and replaced by glass.

At the Lion House, all of the roofing was overhauled, and all necessary plastering in the various cages was done.



At the Small-Mammal House the wire-netting panels of all of the inside and outside cages were thoroughly overhauled, and new bottoms were supplied in cages where necessary. At the Ostrich House, the entire interior of the building was painted, and one of the large ostrich cages was enclosed with a wood and glass partition, to furnish the conditions necessary for an experiment in keeping ostriches in a cold, dry atmosphere during winter.

At the Antelope House, much painting and overhauling of outside and inside fences was done. A permanent partition was built in the large compartment formerly occupied by the hippopotamus, and the floors of several other compartments were supplied with new surfaces of concrete and gravel or with cement-tile, to render them less slippery for the animals.

The entire interior of the Small-Deer House was overhauled and painted, and also the interiors of the Entrance Pavilions.

A room was built for the checking of hats and coats at the Boat House. All the boats were given the annual overhauling and painting, and also the fences surrounding the Duck Aviary, the Beaver Pond, Elk Range, Asiatic-Deer Ranges, Antelope and Small-Deer corrals, and Mountain Sheep Hill.

Much work was devoted to the Bear Dens, where a great deal of new iron work, in the shape of overhangs and partitions, was supplied.

The heating systems in the various buildings have reached a very unsatisfactory state, calling constantly for expensive repairs. Five boilers had to be taken down, and reset with many new sections. Owing to the unfortunate conditions governing the public letting of contracts to the lowest bidders, and the impossibility of specifying the type of heater to be put into each new building, we now have *eight* different kinds of furnaces in our buildings! This state of affairs is not only ridiculous, but it is also highly expensive and troublesome beyond what it should be.

The Public Comfort Station at the Boston Road Entrance was placed in commission, necessitating much work in the draining of the cellar, by means of a concrete pit and an automatic cellar-drainer.

Several of the deer barns were re-shingled, and the roof of the Service Building, which is in very bad condition, was patched in different places.

The maintenance of the forests, new plantations, lawns, the various bedding plants, and of the many valuable and fine plants in the buildings, was carried on as usual.

Special attention was paid to the prevention of fires, new extinguishers being installed in several buildings, several fire drills being held, and a regular system of inspection of fire-extinguishers being organized. An alarm whistle operated by compressed air was installed in the Service Yard. This whistle, by means of which separate signals are given in case of the escape of an animal, or in case of fire, has already proven invaluable.

The usual distribution of food, sand and other supplies, and the removal of animal refuse, ashes, garbage, etc., was carried on as heretofore, in increased quantities.

A great deal of time was devoted to the crusade against the indiscriminate throwing about of refuse, especially on Saturday afternoons and Sundays, when the great crowds thronged the Park. From fifteen to eighteen men were employed on this work every Sunday, under the personal supervision of Mr. Merkel, and with marked effect. That this crusade, however, will have to be one of continued effort, was clearly shown by the one or two Sundays on which the force was reduced. During the year 1910 it may become necessary to make a number of arrests, and publish the fact that these arrests have been made, as warnings to persistent offenders against law and order. The only arrest found necessary this year was made by the Chief Forester, and a conviction and reprimand was obtained.

Forest fires on the east side of the Bronx River, and in the strip between Boston Road and the Bronx River, continue to be very troublesome. The greatest number originate in the newly acquired strip of park along our eastern boundary. This area has very inadequate protection.

At the Nursery, the usual work of raising bedding-plants, trees, shrubs, vegetables and live stock, was carried on as heretofore. A list of the supplies produced, is appended herewith. The facilities of the green-houses continue to be somewhat inadequate, and with the additional bedding designed for the Concourse, it will be imperatively necessary to obtain more greenhouse room. Another improvement much needed at the Nursery is an incubator and brooder-house. At present the cellar of the breeding-house is used for this purpose, but that is so dangerous a location for the many brooders and incubators heated by kerosene lamps, that undoubtedly in case of an explosion, or the up-

setting of one of the lamps, the whole building would be destroyed by fire.

#### PRINCIPAL NURSERY PRODUCE FOR SEASON OF 1909.

1963	Chicks and Fowls.	200	Bushels of Beets.
1097	Rabbits.	9500	Heads of Cabbage.
1172	Guinea Pigs	4352	Ears of Corn.
1835	Rats and Mice.	102	Bushels of Tomatoes.
14	Pigs.	6664	Heads of Lettuce.
10079	Eggs.	24	Bushels of Carrots.
80	Barrels of Potatoes.	10	Bushels of Turnips.
12000	Roots of Celery.	15	Bushels of Parsnips.
26½	Tons of Mangels.	8000	Bedding plants.

#### DEPARTMENT OF ADMINISTRATION AND PRIVILEGES

H. R. Mitchell, Chief Clerk and Manager; William Mitchell, Assistant.

This department carried on the increased volume of work resulting from the continued development of the Park and the various division of the privileges during 1909 without the addition of a single employee to the office force. But one office employee has been added in the past four years, during which time the volume of Privilege business has more than doubled, and expenditures for the Maintenance of the Park have increased by nearly \$30,000.

*Privileges.*—That the year just closed has been the most successful in the history of the Park so far as the Privileges are concerned is attested by the substantial balance in the Animal Fund at the close of the year. For the first time, the receipts placed to the credit of this fund were appreciably in excess of the total expenditures made for the purchase of animals during the year.

The total income and profits of Privileges for 1909 increased about 20% over the year 1908. The entire amount, however, was not remitted to the Animal Fund, about \$6,000 being invested in Guides, Souvenir Books and other stock for future sales.

*Soda Water.*—A popular improvement made during the past season at the various soda stands was the addition of tables and chairs for the use of patrons. These were placed in shady places about the fountains. At the stand near the Reptile House,

the wooden platform for tables was extended at the rear and sides, providing room for a number of additional tables so located as to be well shaded by the trees of the surrounding grove. At the Soda Pavilion near the Bird House it was decided to extend the service somewhat during the fall and winter months; and accordingly a gas service-pipe was put in to supply heat, and a set of urns was installed to provide for the serving of coffee and other hot drinks.

*Lunch Pavilion.*—For several years past the demands for accommodations for basket and lunch parties at the Rocking Stone Restaurant have been increasing. While it interfered with our regular restaurant service, we have hesitated to exclude such parties from the Lunch Room portion of the restaurant until some provision for their accommodation could be made elsewhere. In the spring of 1909 it was arranged to remove the benches from the Shelter Pavilion near the Fox Dens and put in tables and chairs for the free use of lunch and basket parties.

Park employees were advised to direct such parties to this pavilion. In this way much luncheon refuse is accumulated in one place, instead of being scattered throughout the Park. The regular soda service was extended to include coffee at five cents per cup. That the accommodations for lunch parties seemed to be fully appreciated was indicated by the greatly increased business at this stand.

*Rocking Stone Restaurant.*—The year 1909 was by far the most successful in the history of the Rocking Stone Restaurant since it was opened eight years ago. Its patronage fully demonstrated the necessity for enlarging its present capacity by extending the dining room. This can be done at a comparatively small expense; for the kitchen and service facilities generally are ample to handle satisfactorily a dining room of double the capacity of the present one. Every Sunday throughout the fall of 1909, when the weather was at all favorable, the dining room was entirely inadequate. Parties were obliged to wait their turn to secure seats, and many went away without being served.

For the only restaurant in the central portion of the Park, such a state of affairs is a serious matter. It is not only a duty to the public, but also to ourselves, that we shall be able to serve patrons properly at all times; for otherwise the report soon gains wide circulation that the restaurant is over-crowded and it is useless to go there because of a lack of accommodations. It is of great importance that the main dining room should be ex-

tended eastward without delay; and fortunately this can easily be done.

*Boat-House Restaurant.*—The Boat-House Restaurant is slowly but surely gaining patronage, and it is only a matter of time until it will have a well established reputation with Park visitors. Several improvements have been made during the past year, adding to its attractiveness and raising the standard of the service. On account of its being located outside the enclosed portion of the Park, and convenient to the Subway terminal, there has been considerable demand for the facilities it affords for catering to private parties, small clubs and other organizations. This class of business has assisted materially in acquainting the public generally with the existence and location of this restaurant.

*Boating.*—The Boating receipts for 1909 increased 33% over those of the previous year. An idea of the popularity of this pastime with visitors may be gained by the fact that more than 11,500 row-boat tickets were sold during the season, which was an increase of about 2,500 over the total number of the previous year.

The new electric launch "Penguin," which was put into service when the season opened, was a much-needed and valuable addition to our equipment. In 1908 the single launch "Albatross" carried 9,557 passengers, and in 1909 the two launches carried 17,938, almost double the number handled in 1908. Part of this increase was due to the fact that the rate for small children was reduced to five cents.

*Guide Books.*—It was expected that the "Elephant Edition" of the Guide Book, of which 30,000 copies were printed in 1907, would be sufficient for the year 1909. Inasmuch as the sales during April, May and June were so large that it seemed certain the edition would not run through the period of the Hudson-Fulton Celebration, a new edition of 30,000 copies, to be known as the "Bison Edition," was ordered. By rushing the work, a partial delivery, with a special cover in Hudson-Fulton colors, was made barely in time for the celebration. These books sold remarkably well, 3,000 being disposed of during the period between September 25th and October 9th. The profits from the Guide Book were greater by far than in any previous year. At the same time a special Hudson-Fulton *Bulletin*, written by Dr. Hornaday, was on sale wherever the Guides were sold, from September 25th to the close of the year, and 2,300 copies were sold during that

time. The profits on Guides showed an increase of 45% over 1908. The present edition, which is the tenth, brings the total number printed since the opening of the Park, ten years ago, up to 118,000.

*Souvenir Books and Postals.*—A new edition of 20,000 copies of the fifty-cent Souvenir Book was issued and placed on sale during the year. Delivery was made near the close of the season, and as a result, several thousand dollars of the season's Privilege profits are invested in this stock. The new issue is the first one produced in colors, the illustrations having been made from three-color blocks.

The book contains thirty-two pages (eight more than any previous issue) of illustrations of animals and buildings, from a carefully selected series of our own photographs. On this publication the profits showed a slight increase over last year.

The gross sale of souvenir postals was considerably more than in the previous year and the profits greater than in any year except 1907. The margin of profit was somewhat decreased through increasing the number of cards in each set.

*Riding Animals.*—The business done at the Riding Animal Stand was entirely satisfactory, considering the fact that we have been without a riding elephant for three years. The profits from this branch of the Privileges showed an increase of 53% over those for 1908.

*Gate Receipts.*—Since the opening of the Park there has been a gradual increase in the receipts at the gates for admission on pay days. The year 1909 showed a gain of several hundred dollars over the previous year.

*Band Concerts.*—Notwithstanding the impossibility of securing a band from the city fund appropriated for music in public parks, for the first time in the history of the Park the giving of band concerts during the summer was attempted. A temporary band stand was erected in the center of the open space on Baird Court, between the Lion House and Bird House. Commencing in June and continuing through the months of July, August and September, concerts were given each Sunday afternoon. Unfortunately, owing to the very serious inadequacy of the "Maintenance Fund" for the year, the entire expense of the concerts had to be borne by the "Privileges." Owing to the limited amount that could be spared for this purpose, the size of the band, and the number of concerts, had to be equally limited.

The experiment fully demonstrated the popular desire for summer concerts in the Zoological Park. In making up our application to the Board of Estimate and Apportionment for maintenance for the year 1910, a modest sum was asked for to cover band concerts. The item, however, was not allowed, and if concerts are to be given this season they will have to be at the expense of Privileges as last year.

Just why it is that the city positively refuses to provide a band for the Park that contains every Sunday in summer the greatest number of visitors, we are unable to understand, but it is a fact that in this respect the Zoological Park fails to share in the music privileges that are supplied to other parks.

*Bureau of Information.*—Owing to the lack of facilities for properly exhibiting Guide Books, Souvenir Books, Postals and other publications of the Society at the entrances and to the fact that very few visitors will pause to examine or purchase publications when entering the Park, we very much need and desire a Bureau of Information in some central location where visitors can obtain any information desired regarding the Society and the Park.

In order to give the Hudson-Fulton *Bulletin* as wide distribution as possible during the period of the Celebration, and to supply the added accommodation to visitors, Mr. Mitchell temporarily established such a bureau in the Lion House, where publications could be examined at leisure. The sales made at this bureau from September 25 to December 31, a little over three months, were about eight hundred dollars, and quite sufficient to demonstrate the need for such a feature, and its ability to be self sustaining. As the Heads and Horns formerly stored in the alcove in the Lion House are now being transferred to the Administration Building, it is hoped this alcove can be made available as a permanent location for such a bureau.

*Refrigeration Plant, Laundry and Ice Factory.*—This project has long been the greatest need and desire of the Privilege Department, but because of the first demand for construction of animal buildings and installations, it has never until this time received serious consideration.

The Privileges of the Park have now grown to such proportions that it has become almost impossible to conduct them properly and in a manner consistent with the high-class business policy of the Society, without providing a suitable building with adequate facilities for their various activities. The day for

manufacturing in sheds and basements, and paying exorbitant prices for ice, has gone by.

Plans are now in preparation for a two story building 30 x 100 feet providing room on the first floor for an ice-storage room thirty feet square, to be filled with natural ice when available, otherwise for manufactured ice; three brine-cooled chill-rooms each 10 feet square for the use of the restaurants, ice cream business and Maintenance Department; a machinery room about 30 x 40 feet to contain an ice manufacturing machine and a complete equipment for the manufacture and storage of ice cream. The temporary ice-cream shed built two years ago has already been completely outgrown. In addition to the rooms just mentioned, there should be stock rooms for the ice cream department, another for the soda dispensers, and a storage room for soda fountain supplies and bottled goods.

On the second floor of this building, occupying a space about 30 x 50 feet, there must be better accommodations for our laundry, by which it will be better enabled to take care both of our present and our increasing needs. The remainder of the second floor will be devoted to storage and a tank room for the ice-factory.

A building such as described and planned will not only effect great economies in the various branches of the Privileges, but will enable us also to advance the standard of service. It is sincerely hoped that the funds for this building and its equipment will be forthcoming without unnecessary delay, and that its construction can be made possible during the year 1910.

*Shelter Pavilion East of Bronx River.*—A Shelter Pavilion, to be located somewhere near the center of that portion of the Park lying east of the Bronx River, is very much needed. This vast area of more than 100 acres is now wholly unprovided with storm shelters. A very large number of visitors frequent this part of the Park, annually, among them many picnic parties, by whom the accommodations afforded by a moderate-sized shelter pavilion would be very greatly appreciated. We think they are entitled to this consideration, and the Society desires that it shall be provided in the near future. With such a pavilion provided, it would be easy to confine to it the lunch and picnic parties, and consequently reduce to a minimum the scattering of papers and refuse over our eastern grounds. The pavilion should be supplied with service similar to that in the Shelter Pavilion near the Fox Dens, in the enclosed portion of the Park.



## DEPARTMENT OF PHOTOGRAPHY AND PUBLICATION.

Elwin R. Sanborn, Photographer and Editor.

During the year 1909, the duties of this department have increased materially. The rapid growth of the collections, special and regular publications and the general publicity work, have all served to tax its capacity to the limit. To maintain the high standard of excellence of the publications—without increasing their cost—has become a problem. In the last ten years the advance for typographical work and paper stock has been from 30 to 40 per cent. Because of the high price of skilled union labor great care is necessary in the preparation of copy. Mistakes turn quickly into expense and, therefore, the number of them must be kept as small as possible.

If the maximum in results is to be obtained for the Society, there can be no compromise in the quality of the printed matter. Bad printing is worse than useless. The fine character of its publications serves to keep the Society before the world, and it has been learned that the most effective plan to gain and hold the public interest is by maintaining the present high standard. A well printed and richly illustrated publication not only interests the ones to whom it is sent—it interests their friends as well. This cumulative effect is vitally important.

Since the Spring of 1909, an active campaign for new members has been carried on. A four-page circular, large quarto, 10x12 inches, printed in red and black on Van Gelder hand-made paper, with two animal subjects on plate paper, was mailed in April and November. In December, one of thirty-two pages, with a handsome cover and many illustrations, was sent out.

Five numbers of the Zoological Society *Bulletin* were issued. One number was especially devoted to Game Protection, and another of 48 pages in a handsome colored cover—prepared by the Director—appeared in honor of the Hudson-Fulton Celebration. Five numbers of *Zoologica*, the Annual Report and a new edition of the "*Guide*" to the Park were also prepared.

In commemorating the decennial of the Park, a special number of the *Bulletin* was printed, upon which the Springfield *Republican* made the following comment:

"The Decennial Number of the Zoological Society *Bulletin*, published by the New York Zoological Society, which is responsible for the world-famed Bronx zoo, is about as attractive a publication for those who are interested in wild animals in captivity as one would wish to see. The many illustrations are

beautiful, not only for the excellence of their composition, but for their clearness. They show views of the Zoological Park buildings and grounds, and many pictures of the animals which draw hundreds of thousands of people into the Bronx every year."

In addition to the volume of publication and publicity work, 500 negatives of the collections of the Park and Aquarium were made, and 4,055 prints, classified as follows:

Special purposes .....	478
Park Albums and for sale.....	3,237
Foreign orders .....	340

An extensive series of motion pictures of nearly all the important groups of mammals, birds and reptiles was obtained, illustrating striking habits and animal characteristics not often seen by the every-day visitor. Numerous requests to see these pictures have been received, and it is believed that through them the work of the Park and its wonderful collections will be brought to the notice of the many people who are not already familiar with it.

#### CONTRACT WORK IN GROUND IMPROVEMENTS

Conducted under the direction of the Park Department of the Borough of the Bronx. Martin Schenck, Chief Engineer; W. P. Hennessy, Assistant Engineer.

Only one incomplete contract existed at the beginning of 1909. During the spring of that year, however, one building was begun.

*The Administration Building.*—This structure, long needed by the Zoological Society for the transaction of its business in the Park, was undertaken late in 1908, under a contract with John V. Schaefer, Jr., at \$73,328. Its location is on the north-eastern quarter of Baird Court, overlooking the Concourse and Lake Agassiz. Work on this building was vigorously prosecuted throughout the summer by all the sub-contractors save the one responsible for the iron-work. That one greatly delayed the whole building, and instead of the finish expected in November, 1909, that event was delayed until the end of February, 1910.

The Administration Building represents the first and the only recognition that the members of the Zoological Society have yet received from the City in the Park. Heretofore there has been no meeting-place for members, or even for officers, save in the Director's office, and the need of a proper official headquar-

ters for the Society has been keenly felt. Besides the executive offices, the new building will contain proper assembly rooms for members, and rooms for the Society's zoological library, pictures and statuary. For the present the two picture galleries in the second story will be given up to the temporary installation of the National Collection of Heads and Horns, because there is no other place for it; but it is hoped that in the near future the City will provide a special building for that already famous collection, in order that it may be thrown open for the millions to enjoy. The general public is keenly interested in the "Heads and Horns," and while it is a physical impossibility to admit 1,600,000 visitors per year to the office building of the Society, there is every reason why the City should provide a Heads and Horns building in the near future.

Even at present, all artists, illustrators, zoologists and sportsmen specially interested in big game will be given the fullest opportunities to study and utilize for the public benefit all the objects in the National Collection, to which they will be admitted by card.

*Central Public Comfort Station.*—The completion of the Elephant House abruptly forced the consummation of a long-standing plan for a central public comfort station on the most improved principles. Accordingly, early in 1909 a contract for a building was let to the H. F. English Building and Construction Company, in the sum of \$10,407. This building is being erected against the brick wall bounding the western side of the Service Yard, quite near the Elephant Walk. It will be completed early in the spring of 1910, and as soon as it is opened to the public, the three temporary wooden structures south of the Elephant House will be removed.

#### DEPARTMENT OF CIVIL ENGINEERING

George M. Beerbower, Civil Engineer.

During the year 1909, the most important work of our engineer was general survey work, and the drafting of complete plans and specifications for the series of emergency bear dens. Next to that was the inspection, as the representative of the Zoological Society, of the new Central Public Comfort Station, built according to the plans prepared by him.

The usual amount of miscellaneous service was rendered by our engineer.

Of special interest to the Zoological Society was the completion by Mr. Beerbower of a large record map of the Park, as it is at this time, drawn on a scale of 50 feet to an inch, and rendered in colors. When exhibited for the first time, at a meeting of the Board of Managers, it made a pronounced impression, and a duplicate copy for exhibition purposes was immediately called for.

#### NEEDS FOR THE FUTURE

The imperative needs for the immediate future are three in number, and it is difficult to decide which is most urgent.

*Emergency Bear Dens.*—As is already well known, our collection of bears is very large, (37 specimens). It contains many species, (17), and it is certainly one of the most popular of all our exhibits. The eleven large dens are seriously overcrowded, and when the four young Alaskan brown bears, now rapidly coming on, reach a size approaching maturity, our troubles in preventing tragedies will be even more serious than they now are. We must have several new dens, and we must have them *immediately!* The plans are all ready, the site is available, and the sum necessary to build them is very small. Unless these dens are provided *this year*, the Director can not guarantee a peaceful future for the bears. Seven bears in one den make at least three too many.

*The Zebra House.*—No zoological garden or park is either complete or great without a proper building for a fine collection of zebras, asses and wild horses. At this moment we have seven species of wild equines, and no place in which to keep them, or exhibit them. They are scattered from the old Moose House in Birds Valley, to the southeastern Fallow Deer Range, but the majority are in the Antelope House, where they usurp space that should be occupied by large African antelopes. A Zebra House, with a fine series of yards, and two log barns already on the ground, has been planned to occupy the entire hill once dedicated to moose, on the west side of Bird Valley, and an application for a very moderate sum of money (\$42,000) is now before the Board of Estimate.

*Eagles and Vultures Aviary.*—We are already in possession of a very fine series of eagles and vultures, old world and new, embracing many rare and showy species. At present the birds are quartered in several different places, and they have no iden-

tity as a collection. Worse than this, the birds are kept in temporary quarters that are entirely inadequate for them, while a fine site in the old Caribou Range is waiting for an adequate and imposing Aviary. The plan is ready, and an application for the cost has been made.

With the three additions mentioned above, our outfit of animal buildings and other installations for exhibits will be practically complete. We hope to compass all three of these desires during 1910.

Respectfully submitted,

WILLIAM T. HORNADAY,  
*Director.*



SAWING OFF THE SPLINTERED END OF AN ELEPHANT'S TUSK.

## REPORT OF THE VETERINARIAN AND PATHOLOGIST

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THERE has been no epidemic among the animals during the past year, and except for the slight increase in mortality, the health of the animals has remained good. It is encouraging to report that gastro-enteritis among the hoofed animals has now ceased to be a factor in the death-rate.

*Pneumonia*.—There has been a larger number of cases of pneumonia than usual. These have, for the most part, been confined to the animals in the Small-Mammal Collection. Broncho-pneumonia has been the type principally observed, although a number of cases of pure lobar pneumonia have been found.

*Distemper*.—The wisdom of maintaining a strict quarantine system for new arrivals has been well demonstrated during the past year by the checking of two aggravated cases of distemper. Two hyæna dogs arrived at the Park during the summer from Europe, and were immediately placed in quarantine cages.

On examination, one of them was found suffering from a severe attack of distemper, showing the extreme nervous symptoms so characteristic of distemper in wild animals. The second animal also showed evidence of the disease, which within a few days became marked. Both animals died. If they had not been isolated, but had been placed in contact with other carnivores, we should doubtless have had a severe epidemic to report, instead of the two cases.

*Gastro-Enteritis*.—This disease among our native American hoofed animals may now be said to be eradicated. No large or important hoofed animal was lost during the past year with this disease. In the few cases that have occurred the cause has been traced to irritants contained in the baled hay.

*Tuberculosis*.—Tuberculosis still remains an unimportant factor in the death-rate. No cases have occurred outside the Primate Collection, and the few cases which occurred were in animals in which the infection could be traced from outside sources.

*Anthrax, or Splenic Apoplexy.*—Two fine mule deer were lost from infections with anthrax. Both animals were bucks, bred in the Park, and were fine specimens. They occupied the same corral, and were both found dead upon the keeper's arrival in the morning. The suddenness of the death suggested some acute poisoning, but the post-mortem examination, and the microscopical examination of the blood, demonstrated the cause of death to be anthrax.

This disease is due to the introduction into the blood or tissues of the *Bacillus anthracis*, or its spores. The microbes are always found in the anthrax lesions, and in advanced stages in the blood of the victim. *Herbivora* are affected chiefly with the intestinal form of anthrax, infection in these cases commonly resulting from the ingestion of hay or other food containing spores. We have witnessed the disease in fallow deer, hog deer, mule deer, and in a bison. From inquiries received relative to a rapidly fatal disease among deer and other wild animals, I am led to believe that all wild herbivorous animals are highly susceptible to infection by anthrax.

Anthrax is a rapidly fatal disease, and in all cases in wild animals that have been observed by us, the diagnosis has been made on post-mortem findings.

In the cases of the deer, the animals were found dead in the ranges without any previous history of illness. In the case of a buffalo cow, the animal was found lying down in the range, and did not get up when approached. There was difficult breathing, bluish color of the mucous membranes of the nostrils and mouth, trembling and prostration, convulsions and death within a few hours. The examination of the tissues and blood showed the infection to be anthrax.

*Diagnosis of Anthrax by Post-Mortem Examination.*—The post-mortem changes occurring with this disease are quite characteristic and fairly constant. The bodies of animals which have died from anthrax are often well nourished. Rigor mortis is absent, and decomposition quickly takes place. Frequently blood will be seen escaping from the mucous surfaces immediately after death, especially from the mouth and nostrils. The capillaries of the skin are distended with dark blood of a tarry-like lustre, and showing little or no tendency to coagulate. It does not assume its normal red color when exposed to the air. Haemorrhages are frequently seen beneath the epidermis. The



sub-cutaneous tissue is sprinkled with ecchymoses. An oedema of the connective tissue of the neck, or about the trachea, is often very marked. The muscles vary in color, but usually they are darker than normal, and like the skin, they often become sprinkled with ecchymoses. The heart muscle shows the same changes. The internal organs contain a large quantity of blood. The heart cavities are filled with dark colored non-coagulated blood. All the larger veins are also filled with blood having the characteristic tarry-like lustre. The spleen is usually enlarged. The pulp is soft, more or less liquid, and stained a dark red color. The capsule is tense, and is frequently sprinkled with ecchymoses. The liver and kidneys are highly congested and somewhat enlarged. The lungs are greatly congested, oedematous and show areas of intense haemorrhages. On cross section the lungs present a dark reddish or blackish appearance, and the color does not change but slightly when exposed to the air. The mucous membrane of the larynx is greatly thickened from oedema. The trachea and bronchi contain much bloody froth and mucus. The brain is often studded with minute haemorrhagic spots.

It is important not to confuse this disease with a number of non-specific disorders, and accidental causes of death. The suddenness of the attack may tend to mistaking it for poisoning, heat apoplexy, death from lightning. In all of these cases the doubt following the post-mortem can be easily settled by a bacteriological examination which if the disease be genuine anthrax, will reveal the presence of anthrax bacteria. If the diagnosis cannot be determined by the anatomical changes, or if these changes appear doubtful, the positive diagnosis can then be made only with the finding of the anthrax bacteria in the blood.

*Prevention.*—In all cases of anthrax occurring in ranges or corrals, the well animals should be removed from the land where the animals became infected and carefully quarantined for a period of three or four weeks. Only by careful isolation and safe disposition of the dead animals, can the spread of the disease be checked. All infected buildings, corrals and ranges should be carefully disinfected.

The disposition of dead bodies in an outbreak of anthrax is a matter of great importance. In all cases they should be burned, if possible; if not, they should be buried deeply and covered with quicklime before the dirt is replaced. The ground around where the animals have lain, and buried, should be thor-

oughly burned over in order to destroy the spores of the germs which have considerable resisting power.

*Cryptogamic, or Mould Poisoning in Ruminants.*—The growth of mould on grain, hay, potatoes and moss have at times rendered these substances, when fed to ruminants, dangerous poisons.

Mouldy and musty grains and fodder have long been notorious for producing diarrhœa, extreme emaciation, weakness and death. Paresis of the hind limbs is a common manifestation, suggesting lesions of the spinal cord, and in other cases there are general paresis and delirium suggesting cerebral lesions. We have seen numerous cases of fungus poisoning in caribou from eating mouldy moss during the summer months.

The duration of the disease is very uncertain. In mild cases in which diarrhœa is the only prominent symptom, recovery may take place within a few days. On the other hand we have witnessed death within twenty-four hours and again it may be prolonged for one or two weeks before terminating fatally. In all such forms of poisoning there is the history of the ingestion of the toxic matter, and in any suspicious looking cases a careful examination of the food should be made.

*Symptoms.*—In all the cases of fungus poisoning observed by us, the symptoms have been well marked and fairly constant. The following symptoms have been noted in a number of cases in our collections:—Loss of appetite and suspended rumination; considerable abdominal pain, manifested by uneasy movements, as walking around in a circle, lying and getting up almost immediately; dilated nostrils and hurried breathing (pain breathing); the walk becoming weak, unsteady and staggering; eyeballs injected (whites of eyes blood-shot).

The bowels soon show a fœtid diarrhœa; marked irritation of the urinary organs, urine being passed in small quantities, and at frequent intervals, later total suppression of urine. In some very acute cases a marked narcotic action was shown, with paralysis and stupor, but without any manifest disorder on the part of the digestive or urinary functions. In other cases symptoms of delirium were present and the animal threw itself violently about and against the wall, death taking place in convulsions. In cases which assumed a chronic course, the symptoms were those of chronic indigestion, death finally terminating from emaciation and weakness.

The post-mortem signs in animals suffering from fungus poisoning are quite characteristic and constant. The blood is dark in color and does not coagulate well. All the organs are much changed; the kidneys especially are in a state of severe inflammation. The lungs are very dark in color, and show intense engorgement with blood. The last compartment of the stomach shows many small haemorrhagic spots about the size of a bean, scattered all over the mucous surface. The small intestines also show extensive irritation, and contain much imperfectly digested food. The brain and spinal cord are generally congested.

*Treatment.*—The first object must be the removal or neutralization of the poison which is lodged in the intestinal canal. In many cases on account of the intractability of the patient, this is often impossible to accomplish. The action of the bowels should be encouraged by full doses of sulphate of soda in the drinking-water.

In some cases in which the appetite was not entirely lacking, we have had some success by the administration of such anti-ferments as salol and salicylic acid in the food and Iodide of Potassium in the drinking-water.

Prevention of this disease of course consists of the careful inspection of the food supplies and the elimination from the diet of all musty smelling and mouldy food.

*Gastro-Intestinal Catarrh in Carnivores.*—Among the carnivores in the Small-Mammal Collection there has been a considerable number of cases of gastritis and enteritis.

Overloading of the stomach in *carnivora* generally produces vomiting, which soon sets things right. If vomiting does not come on, the animal will retch and turn away, with nausea, from any food placed before it. Thirst, as a rule, is increased; respiration is often greatly accelerated. The animal is dull, depressed, or it may be uneasy, frequently changing its resting place; groaning, whining and showing signs of colicky pains. A distinction between catarrh of the stomach and catarrh of the intestines can best be made in *carnivora*, because in the disease affecting the stomach the most important symptom,—vomiting,—is seldom absent. At first, the vomited matter consists of normal chyme; but later on, of ropy, *glairy* mucus, which contains air-bubbles, and sometimes bloody or yellowish streaks,

and, especially in cases of severe and prolonged vomiting, it may contain more or less pure bile.

As a rule, there is great thirst, and the consequent increased consumption of water gives rise to renewed vomiting. There is little or no appetite, and any food which is taken is generally vomited up within ten to fifteen minutes.

If the intestines be the chief seat of the disease, vomiting will generally be absent; the appetite is more or less impaired, and the most noteworthy symptom is diarrhœa, which is always present, owing to the shortness of the intestinal canal of carnivores.

In mild cases the feces have a pasty consistency, but in severe attacks they are watery, mucoid or slimy, sometimes tinged with blood, occasionally very frothy, and usually having an offensive smell.

*Treatment.*—Purely dietetic treatment suffices in many cases, and may consist in depriving the patient of food and drink for some time; but above all things try and prevent the immoderate consumption of water. In cases of impaction of the stomach, and in those of gastric catarrh caused by the presence of harmful food in the stomach, it is best to empty the stomach as soon as possible by an emetic. This procedure relieves the gastric catarrh, and prevents the occurrence of intestinal catarrh, which might otherwise follow as a consequence of the further advance of the irritating substance. As emetics, ipecacuanha, and hydrochlorate of apomorphine, the latter injected sub-cutaneously, are to be preferred for *carnivora*.

For diarrhœa, rice-water, whites of eggs in milk, port wine or blackberry brandy, in tablespoonful doses, may be given in a little milk or gruel; Tr. opium or Dover's Powder may be given in obstinate cases.

Subnitrate of bismuth, with equal parts of xeroform and pepsin, may be given in ten to fifteen grain doses, repeated three times daily.

After recovery, the mucous membrane of the stomach and intestines should be protected for some time from irritation, by the avoidance of bulky food, which is difficult to digest. The best food is raw meat, given often and in small quantities.

*Convulsions, Fits or Epilepsy in Carnivores.*—Convulsions among the Carnivores are frequently seen. The animals most often affected are wolves, foxes, coyotes, wild dogs, and the numerous species of South American cats.

Epileptiform convulsions are due to an irregular discharge of the nerve cells, which are in a highly unstable condition; they occur unexpectedly, last a variable period, and are either of the nature of one prolonged muscular contraction, or they consist of alternate contraction and relaxation.

The causes of convulsions may be due to injuries to the head or to spinal cord; morbid state of the blood in ptomain poisoning, and in the convulsions that appear in the advanced stages of infectious diseases, as in distemper.

In our experience, the most frequent causes of these convulsions can be attributed to reflex irritation produced by intestinal parasites. Among the emotional causes, fear easily heads the list. The mere sight of a catching-net or shifting-cage is sufficient to induce convulsions in foxes and other highly susceptible animals.

The excess of uric acid in the blood seems to be closely allied to epilepsy and convulsions, and as a result of a too liberal meat diet. This position is greatly strengthened by the fact that epileptiform convulsions are much more frequent in the *carnivora* than in the *herbivora*. It also suggests a light vegetable diet for both preventive and curative purposes in our animals. The frequent and liberal drinking of warm water, and the use of diuretics are indicated.

*Symptoms.*—The attack is usually sudden and unheralded. The animal stops, trembles, cries plaintively and falls; it may manage to rise, but instantly falls again. The limbs stiffen, tremble or twitch, the head is extended or drawn rigidly to one side, or jerked, violently striking the ground. The mouth is generally open, with abundant saliva. The body may be firm and rigid, or alternately twisted in one direction or the other. The eyes roll or squint, and the breathing is noisy and difficult. Insensibility is complete. Toward the end of the attack there may be a discharge of urine or feces. The body is wet with perspiration during or after an attack. The attack usually lasts for two or three minutes, then the convulsions gradually lessen in intensity and finally cease, the animal raises its head, opens its eyes and gazes inquiringly about. In some cases the animal gets on its feet, shakes itself, and appears perfectly normal, resuming its customary habits. In other cases the restoration is less sudden. The animal may remain dull and stupid for half an hour or longer, or in trying to regain its feet will appear to have little control over the leg muscles, and staggers about as if the

	Primates	Carnivores	Rodents	Ungulates	Marsupials	Edentates	Total
Pneumonia.....	5	3	13	3	3	1	28
Gastro-Enteritis.....	5	6	6	2	1	1	21
Killed by Cage-Mates.....	4	3	6	1			14
Malnutrition and Atrophy.....	6		2	3	2		13
Quarantine, (Died or Destroyed).....	5	1	4	1		1	12
Convulsions.....	3	4	3				10
Still Born.....	1	3		3			7
Rickets.....	3	1			2		6
Acute Indigestion.....	2		2		1		5
Parasitic Enteritis.....	1		1		1		3
Fungus Poisoning.....				3			3
Acute Eczema and Catarrh.....	3						3
Distemper.....		3					3
Tuberculosis.....	3						3
Accidental Death.....		1		2			3
Osteomalacia.....	2						2
Nephritis.....	1		1				2
Anthrax.....				2			2
Fatty Degeneration, Heart or Kidney.....		1	1				2
Ptomain Poisoning.....		2					2
Septicemia.....					2		2
Anaemia.....	2						2
Peritonitis.....			1				1
Heat Exhaustion.....		1					1
Tumor of Uterus.....	1						1
Cystic Lung.....				1			1
Chronic Hepatitis.....			1				1
No Lesions.....	2	1	3		1		7
	49	30	44	21	13	3	160

LIST SHOWING CAUSES OF DEATHS AMONG MAMMALS DURING 1909.

muscles were benumbed. Finally, the animal may remain prostrate and fall into a deep sleep, marked by sonorous breathing.

*Treatment.*—In cases due to intestinal worms, the first step must be the removal of these irritants by the use of the various vermicides, as recommended under treatment for intestinal parasites.

In warm weather a too stimulating meat diet may be the cause of the repeated convulsions. In several cases of periodic fits observed among wolves and foxes, the change from a meat diet to "dog biscuits" was found beneficial, improvement being shown in the shortening of the convulsions, and the lengthening of the intervals between them. The "dog biscuits" proved to be a most important element in obviating excessive production of uric

acid. The medicinal agents to be employed are such as are sedative, or tonic to the nervous system. Of all such agents the bromides claim a foremost place. Given in full doses, the bromides tend to induce a quiet sleep, with brain rest and recuperation. If beneficial, they should be repeated until a cure or improvement is apparent. When bromides fail, potassium iodide may be found useful.

During a convulsion a rectal injection of ten to fifteen grains of chloral hydrate in warm water will cut short an attack and put the animal into a quiet sleep, almost immediately.

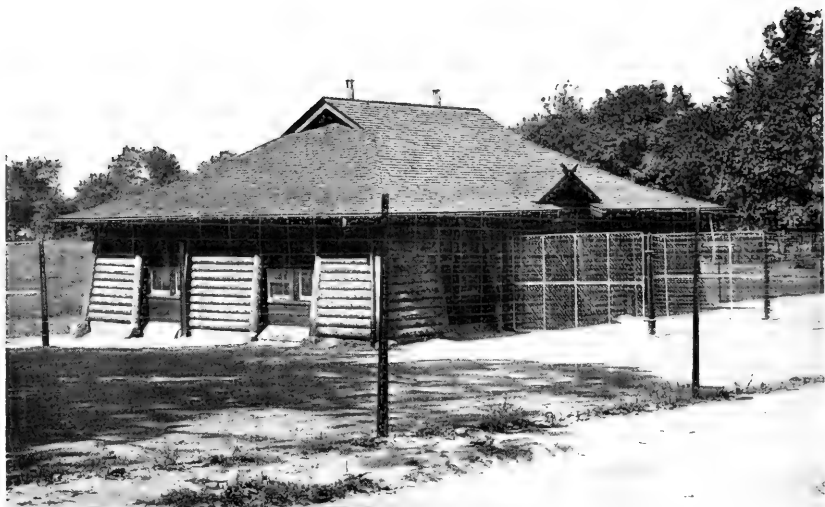
When the fit is over the animal should be kept in a quiet, dark place until the excitement or stupor has completely passed.

As a part of my report, I include a tabulated statement showing the causes of the deaths occurring among the mammals of the Zoological Park during the past year.

Respectfully submitted,

W. REID BLAIR, D. V. S.,

*Veterinarian and Pathologist.*



THE FIRST ADMINISTRATION BUILDING. NOW THE ELK HOUSE.



ARRIVAL OF THE FIRST MAMMAL. WOODLAND CARIBOU.



## TWELVE YEARS' PERSPECTIVE OF THE ZOOLOGICAL PARK

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**T**WELVE years ago the wilderness then known as South Bronx Park was untouched by the Zoological Society, or any other improving influence. The only maps of it then in existence were those made by the Society. The forests were choked by rank weeds and thorny brush. Every flood basin was an unwholesome, miasmatic bog. There were no walks, no shelters, no seats, no fences, no sewerage and no drinking water. Excepting tramps and vagrants, it was only a few of the most bold and persistent lovers of nature who dared to penetrate and attempt to enjoy the unkept wilderness.

The squirrels, rabbits and wild birds generally had so long been freely pursued by gunners and dogs that they had been either killed or driven out; and the woods were almost lifeless. The forests were freely raided for firewood, and whoever wished a small tree went in and felled it.

The Zoological Society posted its warning notices early in the spring of 1898, and to those who were using South Bronx Park as so much waste and ownerless land, they came as a rude shock. Gradually the lines were tightened, and in about three months the marauding portion of the public conceded the fact that the Park was being protected. But in America the lawless spirit dies hard; and it was four or five years after the formal opening of the Zoological Park, free on five days of each week, that the exceptional indignant citizen ceased to express himself to the gatekeepers on the two pay-days, and denounce the contract between the City Government and the Society. The "right" of the citizen to let his dogs run at large in the Park also died hard; but the abrogation of that and the tree-cutting privilege was accomplished without a resort to hostilities.

It is no exaggeration to say that 99 per cent. of all the visitors to the Park have been entirely in sympathy with the Society and its work. The amount of inconvenience and physical discomfort that our millions of visitors have cheerfully and uncomplainingly endured during our ten-year creative period is



THE FLYING CAGE, 1899.



THE FLYING CAGE, 1910.

worthy of all praise and appreciation. But for the patience with the public over raw conditions that were unavoidable, though none the less annoying when they existed, the Society's task would have been much harder than it was; and we have every reason to be thankful to the people of New York for the manner in which they patiently bore with us when there were unsatisfactory conditions which for the moment were beyond control.

In reviewing the events of the past twelve years, the retrospect reveals a chapter of practically unbroken progress. This is remarkable, because it is so unusual in the creation of institutions of higher education; and it is cited for the encouragement of others who seek to build great institutions dedicated to zoology. In comparison with the length of time that usually elapses between the inception of a great vivarium and its completion, the Zoological Park sprang almost full-fledged into existence as Minerva sprang from the brain of Jupiter.

Already it is history, and nine-tenths forgotten, that the Zoological Park came into existence because the members of the Zoological Society agreed to produce from their own private purses the very considerable sum of a *quarter of a million* dollars, and expend the same on the new institution they proposed to create. It was agreed that *if* the Society fulfilled its pledges, the City of New York would undertake to share the general burden, in return for free admission for the millions.

At a period when it seemed as if even New York's marvellous private philanthropy had been drained to its depths by museums, libraries, hospitals and botanical gardens, the Zoological Society cheerfully took up the burden of raising a large sum of money for the purpose of putting the finishing touch to the greatness of Greater New York; for it is well known that no city which lacks a good, respectable, adequate zoological garden or park may properly be described as Great.

For the sake of historical completeness, I am tempted to repeat here a few facts that have already been stated elsewhere in print. Even with one repetition they will be remembered none too widely, nor too well.

The original impulse and effort for the creation of the New York Zoological Society came from Madison Grant, then a sportsman and student of nature, and by profession a lawyer; and very early in its career the new organization secured the active support of Professor Henry Fairfield Osborn. It is impossible to overstate the influence of those two men on the Society's undertaking, and their devotion to the task, year in

Programme.

Opening Day  
of the



**NEW YORK  
ZOOLOGICAL  
PARK**

*Wednesday, November 8, 1899.*



Compliments of the  
**NEW YORK  
ZOOLOGICAL  
SOCIETY.**

## LIST OF COMPLETED BUILDINGS AND OTHER INSTALLATIONS FOR ANIMALS

- No. 43. Mule Deer Range and House.
- " 58. Fallow Deer Range and House.
- " 57. Axis Deer Range and House.
- " 3. Ducks' Aviary.
- " 4. Flying Cage.
- " 5. Aquatic Birds' House.
- " 56. Black-tail Deer Range and House.
- " 42. Virginia Deer Range and House.
- " 41. Red Deer Range and House.
- " 40. Caribou Range and House.
- " 39. Moose Range and House.
- " 38. Elk Range and House.
- " 15. Wolf Dens.
- " 15a. Fox Dens.
- " 20. Aquatic Mammals' Pond.
- " 21. Otter Pool.
- " 30. Antelope Range and House.
- " 26. Prairie Dogs' Enclosure.
- " 22. Burrowing Rodents.
- " 23. Small Mammal House (temporary).
- " 27. Reptile House.
- " 28. Crocodile Pool.
- " 31. Bear Dens.
- " 33. Beaver Pond.
- " 36. Buffalo Range and House.



## LIVING ANIMALS IN THE COLLECTIONS.

Mammals,	43	species,	157	specimens.
Birds,	36	"	175	"
Alligators,	1	"	16	"
Lizards,	13	"	71	"
Turtles,	18	"	94	"
Serpents,	36	"	293	"
Batrachians,	10	"	37	"

Total, 157 species, 843 specimens.

and year out. Without them, New York would have at this time no Zoological Park!

I regard the Executive Committee of this Society as the most remarkable body of men with which I ever have come in contact. The manner in which those men of great affairs regularly, and even joyously, left "their mirth and their employment," to spend from two to four hours at a time in hard-working business meetings, month after month, for thirteen years, was, to at least one man, both an object lesson and an inspiration. Talk about civic pride, and the duties of good citizenship,—the Zoological Park is a lasting monument to that spirit as it exists in the 1764 members of this Society; and in saying this, we only render unto Caesar the thing that is his.

For eleven years,—1898 to 1909,—the composition of the Executive Committee of the Society remained almost unchanged. Its members were:

Hon. Levi P. Morton, ex-officio, President of the Society.

Professor Henry Fairfield Osborn, Vice-President, Chairman for seven years; now President.

Madison Grant, General Secretary.

Charles T. Barney, Chairman for three years, Treasurer four years.

John L. Cadwalader, Counsel.

William White Niles, Attorney.

Percy R. Pyne, Treasurer.

Samuel Thorne.

Captain John S. Barnes.

Gen. Philip Schuyler.

The vacancy caused by the death of Gen. Schuyler has recently been filled by the election of Mr. William Pierson Hamilton.



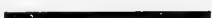



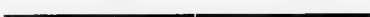




During the first thirteen years of the Society's existence, the Executive Committee held 169 meetings, and only one of them was without a quorum.

The Preliminary Plan of the Zoological Park was submitted to the Executive Committee, and approved by it, on November 27th, 1896. The Final Plan was approved by Mayor William L. Strong, on November 13th, and by the Board of Parks on November 22nd, 1897. The Society's contract with the City was accepted and ratified by the Commissioners of the Sinking Fund on March 24th, 1897.

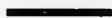










The Society assumed control of the Zoological Park grounds on July 1st, 1898, and began the first work in its improvement

## ANNUAL INCREASE OF COLLECTIONS, 1899-1910

## TOTAL NUMBER OF SPECIES.

1899		179
1900		320
1901		371
1902		448
1903		427
1904		436
1905		657
1906		818
1907		865
1908		962
1909		1117

## TOTAL NUMBER OF SPECIMENS.

1899		781
1900		1493
1901		1674
1902		1955
1903		1904
1904		1802
1905		2867
1906		3624
1907		4034
1908		4579
1909		5000

## ZOOLOGICAL PARK OPENED NOV. 9, 1899.

1900	.....	525,928
1901	.....	527,145
1902	.....	731,515
1903	.....	1,164,146
1904	.....	1,104,616
1905	.....	1,233,528
1906	.....	1,321,917
1907	.....	1,276,041
1908	.....	1,413,739
1909	.....	1,614,953
TOTAL.		10,913,528

## ATTENDANCE OF VISITORS AT THE ZOOLOGICAL PARK.

and utilization on August 11th, 1898, in the erection of the Aquatic Bird House. On August 29th, the City of New York began work on the ponds, walks, roads, water and drainage, for which the very modest sum of \$125,000 had been appropriated. The making of the Wild-Fowl Pond was the first work begun by the City.

It was not until the early spring of 1899 that improvement work reached its maximum speed. During that year about 30 contracts were proceeding simultaneously, and the Park swarmed with workmen. The grounds were for several months in a state of chaos.

Steps were taken to form a permanent staff of officers and miscellaneous employees; to begin the gathering of mammals, birds and reptiles with which to stock the installations that were being prepared; to establish a financial system on entirely new lines; to formulate a code of rules and regulations, and in general make ready for a formal opening in the autumn. There are not more than a dozen persons who know the extent to which the animal installations of the Park, the policies, the rules and the precedents for the future were hammered out of the raw materials, and tried here for the first time. But for the fact





SITE OF THE OSTRICH HOUSE AND SMALL-MAMMAL HOUSE, 1899.



THE OSTRICH HOUSE AND SMALL-MAMMAL HOUSE, 1910.

TABLE SHOWING COMPARATIVE ENDOWMENTS OF  
THE NEW YORK MUSEUMS, FEBRUARY 1, 1910.

Metropolitan Museum.....	\$8,480,782
American Museum . . . . .	2,048,156
Brooklyn Institute . . . . .	400,000
N. Y. Botanical Garden . . . . .	352,611
N. Y. Zoological Society . . . . .	110,000

TABLE SHOWING RELATIVE ATTENDANCE OF THE  
MUSEUMS FOR 1909.

N. Y. Aquarium.....	3,803,501
N. Y. Zoological Park..	1,614,953
Metropolitan Museum . . . . .	937,883
American Museum . . . . .	839,141
Brooklyn Institute . . . . .	346,170
U. S. National Museum. . . . .	245,187

that the Executive Committee gave the Director of the Park the utmost latitude that could be allowed, his part of this creative task would have been much more difficult than it was.

Living animals began to arrive on May 11, about six months prior to the opening of the Park, and during that unhappy interval they were stored temporarily in a hastily constructed "Animal Yard." The carpenter who built the cage for our first large serpent, a very vigorous and vicious python about 16 feet long, turned out a good piece of work,—in all respects save one. It would not hold the snake. Through a fine, large hole that was cunningly left high up at a point quite invisible from without, the serpent joyously slid out to freedom, during its first night in the Park.

The next morning when the fact was reported to the Director, he bitterly asked himself, "And is *this* the way to start a new Zoological Park?"

But the Fates were kind. After three hours of strenuous effort, the snake was located, caught without accident, and replaced in its amended cage. The newness of the Park may be judged by the fact that this really thrilling incident did not reach any newspaper office for four long months! To-day, such an incident would instantly be "tipped off" to some newspaper, by telephone, by the traitor somewhere skulking in our camp, to whom no secret is sacred from betrayal for a piece of silver.

The first large mammal received was a woodland caribou, from Canada, which arrived in May, 1899. It was quickly followed by a small herd of elk, and seven American bison purchased for us in Oklahoma and Texas and delivered at the Park by "Buffalo" Jones. We also acquired a small herd of prong-horned antelope; deer of several species, both native and foreign; bears, wolves, foxes, sea-lions, orang-utans, monkeys and quite a number of miscellaneous small mammal species. From Florida came a carload of southern mammals, birds and reptiles,—an embarrassment of zoological riches pending the completion of permanent quarters for it.

By dint of tremendous exertion, all the installations projected for 1899 were actually completed and occupied by November 7. More than this, during the month of October the first edition of an "Official Guide to the Zoological Park" was written by the Director, printed, and made ready for distribution on the opening day. It was a crude and hurried piece of work, but it spoke for the Society to the visiting public, and served its purpose. Instead of a small volume that could be sold at ten cents,

—the popular price for such guide-books,—ours was planned on liberal lines, and sold at 25 cents. Since that time, nine other editions of the Guide have been published, bringing the total up to 110,000. The amount of matter has been more than doubled, but the price remains the same.

On November 8, 1899, the Park (which never had been closed) was formally opened to the world. The sun shone brightly, and the ceremonies on the terrace at the north end of the Aquatic Bird House were entirely successful. It was realized by the audience that the event marked only the beginning of a gigantic task, not its completion. The public was invited to enter in daily, and observe both the animals and the improvement work that would be going on, provided visitors could endure certain temporary discomforts.

The extremely simple and inexpensive program that was issued for the opening day, partly reproduced herewith, truthfully indicates the modest and reasonable scope of the Society's expectations at that period. The finish of the Park seemed far away, and the future was certainly uncertain. The question was,—how will the changing administrations of New York's kaleidoscopic politics affect the fortunes of the new and struggling institution? Would some party come into power, pledged to sweeping economies, and relentlessly say "No" to all progress under it? In the early days it seemed quite possible that this might occur.

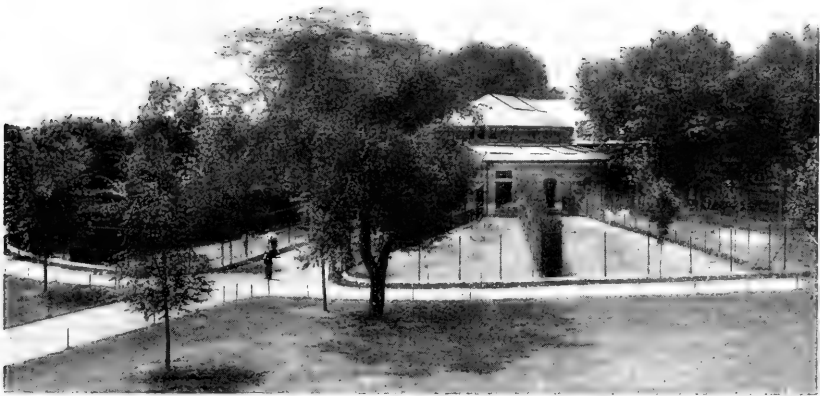
But the Managers of the Society faced the future with brisk and cheerful confidence, believing that the millions of New York sincerely desired, and also *needed*, a great vivarium, on modern lines, befitting the metropolis of the western hemisphere, and worthy of the living wild animals of the world.

As all the reading world now knows, the Society resolved that the Zoological Park should be designed and created on lines of the most far-reaching humanity toward wild creatures that the skill of man could devise. That principle has been faithfully wrought out.

And the world at large realizes that in the Zoological Park nothing has been left undone, and no expense has been spared, to render the wild-animal population not only comfortable but happy from day to day. For the tropical animals, the closer confinement during winter is not so comfortable as ranging free in the open air in summer; but for that matter, most human beings of the temperate zone find the rigors of winter an infliction from which they gladly would escape. As a general



SITE OF THE ANTELOPE HOUSE.



THE ANTELOPE HOUSE, 1910.

proposition, our animals are not "pining behind their prison bars." The vast majority of them are happier, and better fed and watered, than they would be by their own efforts in a state of nature wherein life is one continuous struggle against hunger and sudden death.

As our improvements finally were wrought out, we find that we have not made many mistakes, or serious ones. Our most serious disappointment has been with the Burrowing Rodent Quarters. It was found utterly impossible to utilize large and "palatial" open-air runways for burrowing rodents, and induce the animals to show themselves satisfactorily to visitors in the daytime! As a result the rodents have been placed in cages in the Small-Mammal House, and other animals have been placed in the Burrowing Rodent Quarters.

The most important change from our original design was the forced abandonment of the plan for a line of motor-omnibus cars to carry visitors through the Park, stopping at various stations. For this service it was intended to use the Service Road; but very soon after the construction of the latter it was found to be an utter impossibility to induce visitors to refrain from walking upon it, and keep to the walks connecting the animal exhibits. It was impossible to build the road otherwise than on the general surface of the Park, with crossings at grade, and with this condition, an army of attendants would have been required to keep the road free from pedestrians. It was found that visitors take delight in the width of the Service Road, and for every one who would feel disposed to pay to ride upon it, at least 100 would wish to walk upon it.

The motor-omnibus idea was abandoned because it could not be carried into effect; and to-day the visitors on foot who throng the service road actually seem to resent the passage over it of the few service vehicles that are compelled to use it.

Beyond question, the millions of New York particularly enjoy the Zoological Park because in every sense of the word it is dedicated to pedestrians; and excepting the Grand Concourse for visitors' vehicles, the throngs of women and children are not in momentary fear of being run down by reckless drivers. In New York City it is a great thing to be able to get away from the whirling wheels of traffic, and for a few hours feel absolutely safe.

As one reminiscence leads to another, we are now reminded of the proposed invasions of the Goths and Vandals, from which the Executive Committee has saved the Park. First came a

cold-blooded proposal to slice about 200 feet off the entire western front of the Zoological Park, ruining that area, for the sake of devoting it to wagons and street cars. Fortunately, that noble scheme was killed in its cradle. Then came the scheme to extend the elevated subway through the center of the Park, to the ruin of the area surrounding it. That was killed by the old Rapid Transit Commission. After that the original plan for having the West Farms branch of the Subway (elevated) terminate at 182nd Street, and virtually overhang our entrance, was changed for the better by the consent of the Interborough Company. That company also kindly consented to sell to the City at cost price the "West Farms Block," between 180th and 182nd Streets, which as an elevated railroad yard would have ruined the adjacent portion of our Park.

Throughout the first ten years of its existence, the Zoological Park never has been attacked save once, through the malice of an unfair newspaper man. The Executive Committee once was assailed,—when the axis of Baird Court was changed to what it should have been in the first place. The result to-day is a triumphant vindication of the position assumed and maintained seven years ago by Professor Henry Fairfield Osborn, who saved Baird Court from what would have been a calamity.

In everything save the accumulation of funds, the progress of the Zoological Society and the Park has been steadily upward, with but few halts or variations in the regular ratio of growth. As new buildings have been erected, the collections to fill them have always been gathered in advance. The growth of the collections, both in number of species and in total number of specimens, has marched steadily on. Generally the rate of increase has been about 10% per year, both in specimens and species.

The attendance of visitors also shows the same steady march upward. Of late the gain has been about 200,000 per year. It is fortunate that in the early years of the Park, visitors were not as numerous as they now are; for then the buildings could not have contained them.

A few illustrations of ante-improvement days in the Park, and of conditions to-day, will serve to show the original state of nature,—of meadow, glade, jungle and bog. On the raw lands of twelve years ago, the Society has erected the equivalent of a town, consisting of ground improvements and buildings so highly specialized and complicated that in difficulty they are equal to three times their number of ordinary buildings for dwellings or business.



EXCAVATING THE WILD-FOWL POND, 1899.



THE WILD-FOWL POND AND PHEASANT AVIARY, 1910.



It is always interesting to know how new American institutions are regarded by keen and serious-minded critics from abroad. Zoologically, Americans have much more in common with Englishmen than with the people of any other nation. The English have the habit of judicial analysis to an extent that renders their reviews and criticisms much more valuable than the majority of similar productions on this side of the water. In order that we may once more see ourselves as others see us, the following article from the London *Daily Mail* of December 12, 1909, by Mr. W. Beach Thomas, an English ornithologist, and associate of Lord Northcliffe, will be of general interest:

### “THE PERFECT ‘ZOO.’

“Beyond all comparison the ‘Zoo’ at Bronx Park, just outside New York, is the finest in the world, and coming from a day spent in its precincts in company with its director, I feel as if I had seen the world’s wildest of wild animals in their native haunts.

“Is it quite impossible for Regent’s Park to rival the Bronx? Our English ‘Zoo’ is the most envied in the world. Our Empire touches every part of the world where animals live. Within the Empire all are able to do and are doing what no people has ever been able to do. In Africa we protect animals through the whole course of a long migration. Gifts of animals are showered on our ‘Zoo’ by men who hunt and observe with the native English zest in all parts of the world, but especially Africa, whence always comes, in natural history as in politics, the ‘aliquid novi’—the something new, which Pliny noted centuries ago, now taking the form of an okapi or antelope.

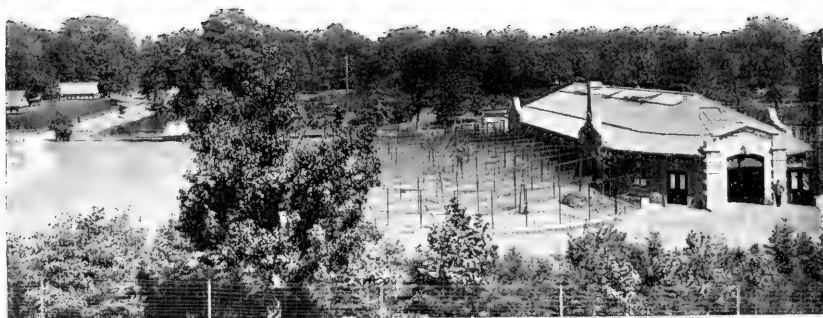
“But the ‘Zoo’ so thoroughly envied even by the Americans, is very far from equalling the Bronx, and is not nearly so popular. Though placed ten miles nearer to the middle of London than the Bronx to New York, it is not visited by more than half the number of people. You come away from the Bronx as you might come away from Woburn Park, happy for having seen a multitude of happy, if captive, animals. In the ‘Zoo’ the restless patrol, the almost insane chase to and fro, the unkempt appearance of the wilder animals often leaves a mental picture that is far from pleasant to dwell on, and keeps many aloof.

### “THE BEAUTY OF THE BRONX.

“No spot in England is quite so well fitted as the Bronx for an animal sanctuary. You walk about a spacious domain of



SITE OF THE SMALL-DEER HOUSE, 1904.



SMALL-DEER HOUSE, 1910.

native woodland, growing a variety of beautiful trees. Where the trees cease the natural rock, a schist glimmering with crystals, rises in abrupt mounds and ridges, and against these rock defences the cages, if the word is allowable, are built. One ridge is inhabited wholly by bears, which run down from the natural heights or emerge from almost natural caves at the beck of the keeper.

"All along the ridges the bears, the great grizzly or the little black bear, have a mien, a pose, an attitude that suggests anything but captivity. Their coats—which in all animals proclaim the degree of health—have a silky, satiny gleam, suggestive of a well-groomed horse. They live there a quiet, happy life. Even Wordsworth might have said of these, as of the wild flowers: 'I must believe that there was pleasure there.' The pleasure was general among big things and small.

"Walking down from the bears' hill we came to the beavers' pond. Lying across it are a number of trees, which the beavers have themselves cut through on the spot. You could watch and test the wild habits of the animal as well in the Bronx as in its haunts. A precise instance of the value of the Bronx as an observation ground was laid out before us. In an admirable and most accurate book recently published it is written that the beavers never plaster their houses with mud. From the water of the beavers' pond at the Bronx rose a house which, in spite of the book, the beavers had completely plastered with mud. Is there any other 'zoo' in the world where, in regard to such a habit of wild life, the field observer could be so corrected?

#### "THE ANIMALS AT WOBURN.

"Nowhere in the world are animals so well seen as at the Duke of Bedford's park at Woburn. Herds of wapiti gallop down towards you, with the impetus of a charge, over many acres. Great buffalo appear and disappear over the brow, or come down to the rail to lick lumps of rock salt. Yaks and ostriches and deer of many sorts career as on Tibetan hills or African plains across your path. From above, you watch ponds which are almost lakes encircled by a baffling variety of ducks and geese. Such a sight no 'zoo' can rival; not even the happy hunting grounds of East Africa have its like. Nevertheless the appearance of the bison in their reserve as you enter the gates of the Bronx Park at once recalled Woburn, and the animals, though the space is not large in acreage, have the air of enjoying a real freedom.



SITE OF THE ELEPHANT HOUSE, 1906.



ELEPHANT HOUSE, 1910.

"This freedom is the expression of the men who make and manage the Bronx. They are men especially skilled in what we call field observation. They have learned the love and knowledge of animals in forest and by river. They have travelled far. The manager of the birds is now setting off to China and Japan to study the life of pheasants in the cradle of their race. Professor Hornaday himself is the protagonist of bird and beast protection throughout the world, and a hunter hardly less than a keeper. In short, you have at the Bronx the ideal of every 'zoo,' the association of the field observer and the scientific naturalist, who, together, have created a 'zoo' where animals live a life that is far removed from the caged or stuffed life of the animals kept in other capitals—in Berlin, or Paris, or to some degree in London.

\* \* \* \* \*

"A million and more people visit the Bronx because they are admitted free, and a national 'zoo' should be as free as a national gallery. The Bronx is supreme because of its space and contour. We cannot rival these qualities in Regent's Park, but we could make room by getting rid of the worst sufferers. The keeper of the birds at the Bronx desires to exclude altogether the tribe of eagles and vultures, even from the spacious Bronx.\* If we were boldly to dispense with those unhappy and, caged as they are, unkempt creatures, we could give the space on which their health depends to many wild beasts whose caged patrol is at present almost as painful to the observer as to the animal itself."

We conclude our brief and sketchy retrospect of the past eleven years with a feeling of profound thankfulness for the combination of fortuitous circumstances that have made possible the creation of the New York Zoological Park in twelve years' time. We say twelve years, because we know the far-reaching influence of the two years of careful, painstaking and also costly preliminary work that was done by this Society before the first sod was lifted in the Park itself. The thousands of dollars expended on the final plans were well invested; for they gave us a large measure of our success.

The public should be thankful to the members of the Executive Committee for the years of diligent toil they have bestowed upon this undertaking, and for the success that is due chiefly

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\*This represents a slight misunderstanding. Plans for a spacious and adequate Eagles and Vultures Aviary are now practically complete, and the Society expects to develop that much needed installation during the year 1910.—*Ed.*



ONE OF THE BEAR DENS, 1899.



ONE OF THE BEAR DENS IN 1910.

to their genius and labors. It was its absolute confidence in the integrity and acumen of the Board of Managers and Executive Committee that led the Government of New York City to support this enterprise as it has done,—cheerfully, liberally, and with a degree of trustfulness that greatly facilitated the work. All this may well stand as a monumental object lesson for other cities, both at home and abroad; and it is a satisfaction to know that other American municipalities are striving to profit by the success of the New York plan for Zoological Parks.

WILLIAM T. HORNADAY.



NEW YORK AQUARIUM

PLATE I. PRELIMINARY PLAN FOR THE ENLARGEMENT OF THE AQUARIUM: FRONT ELEVATION.

The dome in the rear will cover the old section.



# REPORT OF THE DIRECTOR OF THE AQUARIUM

TO THE BOARD OF MANAGERS

## PART I.

### SPECIAL REPORT ON THE ENLARGEMENT AND IMPROVEMENT OF THE AQUARIUM

THE Director of the Aquarium deems it advisable in the present report, to depart somewhat from the form which has been followed heretofore, omitting much detail respecting administration, with a view to giving prominence to matters concerning the future development of the institution.

This seems to be desirable for several reasons, one of which is the phenomenally large patronage by the public. During the seven years in which the Zoological Society has been responsible for the administration of the Aquarium, its attendance has increased beyond that of any institution at home or abroad, of which we have been able to procure records.

The present year ends with the number of visitors exceeding 3,800,000, or more than that of all the other museums of the City combined.

The increase in attendance each year over that of the preceding year, has been counted by hundreds of thousands, while the past year's increase was more than a million. This was not attributable to the crowds of the Hudson-Fulton Celebration, as the Aquarium had over two and a half millions before the celebration began.

It is really urgent that steps be taken by the Board of Managers to place this museum on a logical basis with respect to administrative functions.

Its attractive exhibits and crowds of visitors cannot alone place it in the rank with regard to other museums which it is now desirable that it assume. It has already become the most

notable institution of its kind in the world, and its advancement toward thorough administrative efficiency should no longer be delayed.

Funds should be provided for the maintenance of a small scientific staff. Its office force has up to the present time been limited to the Director and his stenographer. The Director's entire time has been devoted to the supervision of employees, the inspection of equipment, the securing of living exhibits and the training of men in their proper care, the writing of labels, the purchase of supplies, bookkeeping and correspondence with the general public.

Lost in these multifarious details he has been able to do little more in the way of making known the work of the Aquarium to the world at large, than by the writing of an annual report and an occasional number of the *Bulletin* of the Zoological Society.

Time has been found for the preparation of only a few necessary documents pertinent to the work of the Aquarium, two of which have proved to be of such importance that the editions have long since been sold out.

These documents should not only be enlarged and republished as volumes of the New York Aquarium *Nature Series*, but certain other publications should be made available on Aquarium subjects in which the public is interested and for which it makes frequent inquiry.

Two of the publications referred to above have been reprinted by State Fishery Boards in different parts of the country.

The Aquarium has long been in need of a guide book. This document which has slowly been taking form, cannot at present be completed by the Director on account of sheer pressure of office duties.

It is a matter of constant regret to the Director that the Aquarium with its unusual opportunities for observations on aquatic forms of life, cannot be made more useful to science and to the public at large.

With a small staff of curators to observe and record important facts of nature constantly presenting themselves among the living exhibits of the building, such opportunities would not be lost. It may be mentioned in this connection that another publication of the Aquarium on changes in color among fishes, presents something entirely new to ichthyologists. The hitherto unrecorded facts therein set forth, could never have been observed in nature, but must necessarily be studied in just such

an institution as this. We are losing opportunities for certain investigations in which the Aquarium should be the leader.

With a sufficient staff it would be possible to make the publications of the Aquarium as important as those of the Museum of Natural History or the Metropolitan Museum of Art.

The publications of the latter institution have recently been referred to in the New York *Sun* in part as follows:

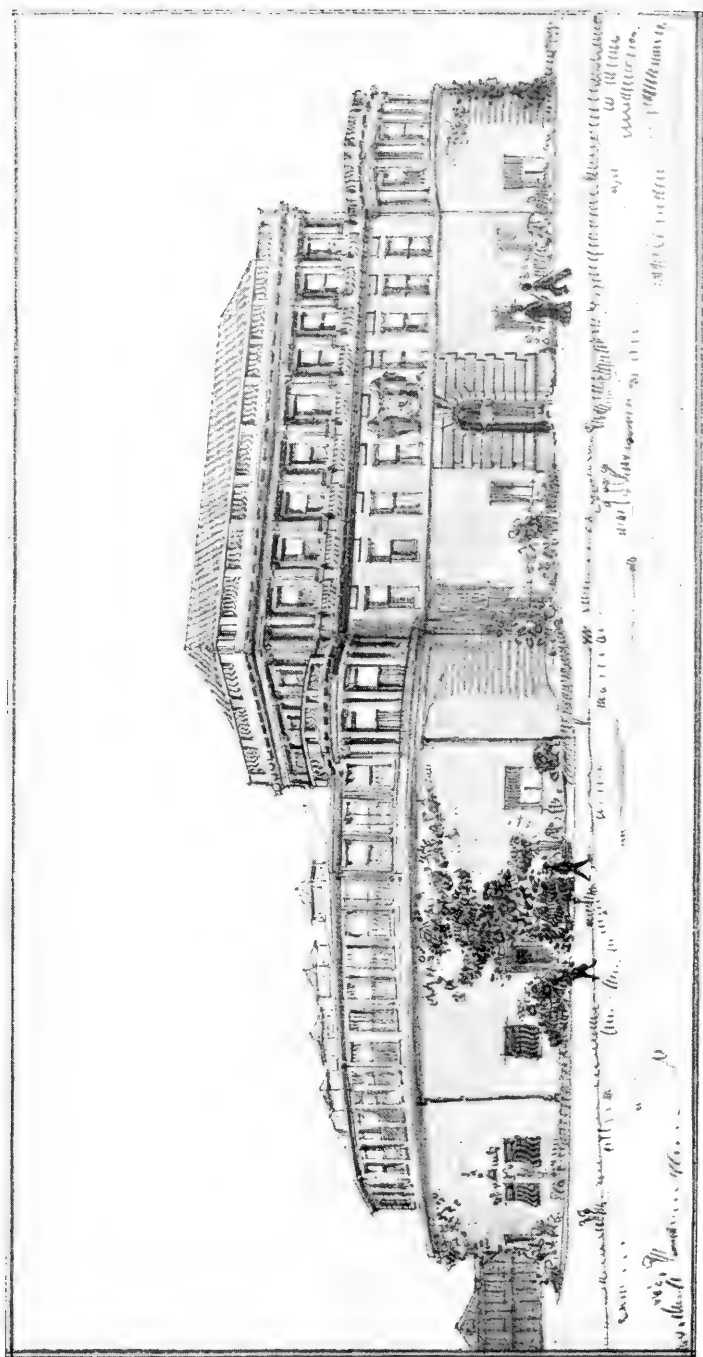
"They [the former catalogues] probably were the best that an overworked and undermanned staff could be expected to produce. The new catalogues are an unmistakable symptom of better things. They mean that the staff of the Museum has been put on a scientific basis—that its officers are no longer keepers solely but curators in the best sense of the term. The work is being well done and the Museum is taking its rightful place among the museums of the world. The Museum now provides its science from the resources of its own organization."

A question often asked by prominent visitors from abroad who have admired the collections of the Aquarium is: "What is the Aquarium doing in the way of advancing knowledge—what are you publishing?" Our meagerly equipped laboratory is a laboratory in name only, having so far been used by less than a dozen volunteer investigators. These men, usually fully employed with their work of teaching in our universities, have found little time for volunteer work in the Aquarium, although they greatly appreciated the facilities afforded. The best way to get things done is to pay some one to do them.

With a properly equipped laboratory and a couple of trained zoological assistants, investigations of value to science and of interest to the public could be carried on. Their services as students of marine zoology are demanded also in the Director's office in the handling of correspondence and in the preparation of material for the *Bulletin* of the Zoological Society. This *Bulletin* should be made a monthly. The Aquarium numbers have, so far, been devoted largely to new observations and are of popular interest. More than 1000 copies a year of the Aquarium numbers have been sold by the doorkeeper. They have been a source of profit.

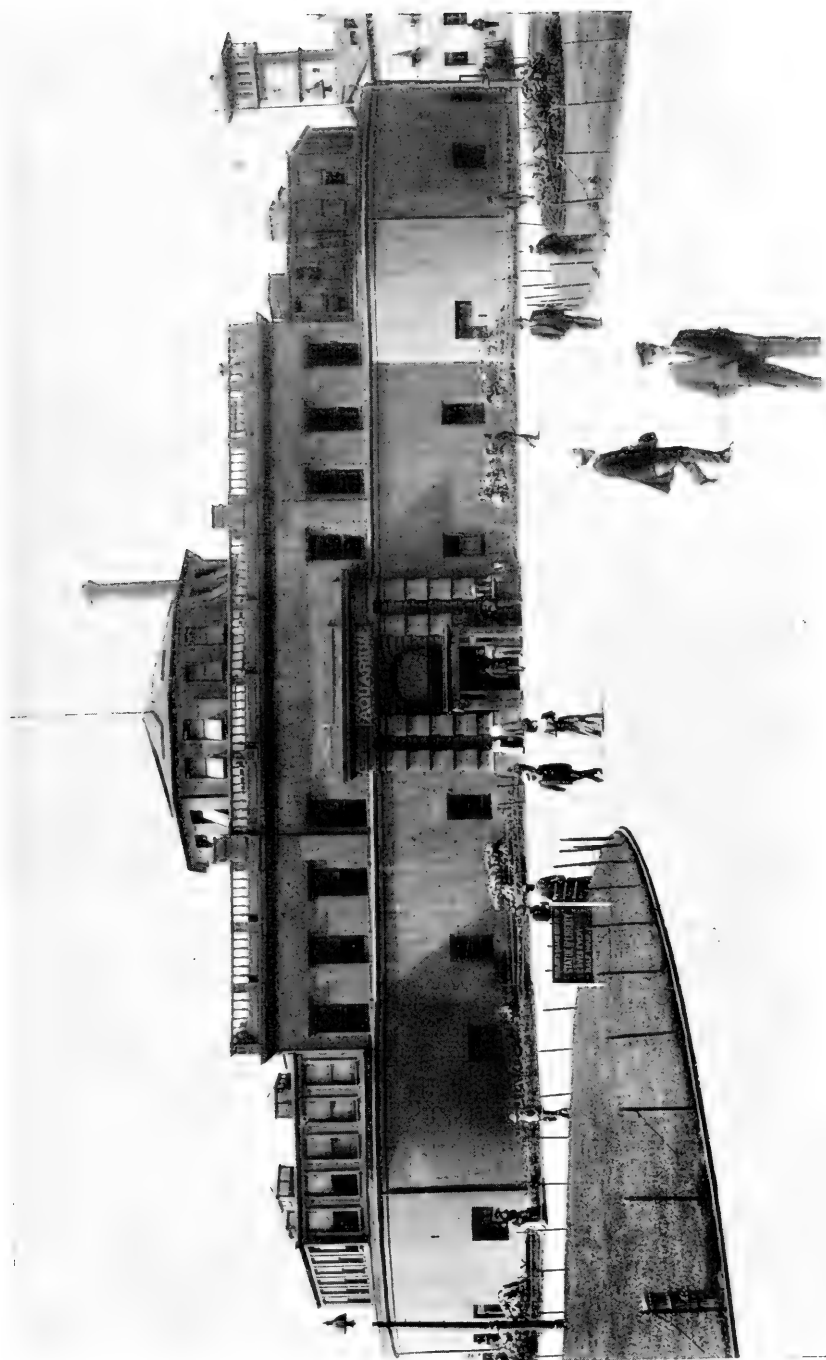
The section of the Annual Report of the Zoological Society devoted to investigation should contain much more in the way of scientific papers than it does and this would naturally follow the appointment of efficient assistant curators in the Aquarium.

A work of great public interest and one of considerable importance which has been carried on at the Aquarium for some



ARCHITECT'S SKETCH SHOWING ONE OF THE SUGGESTED IMPROVEMENTS OF THE AQUARIUM.

This would allow but little increase of the exhibition space.



THE AQUARIUM BUILDING AS IT NOW APPEARS.

years is the distribution of marine aquaria in the public schools. It has been of great use to the teachers of biology throughout the City. Although aquaria have been placed in about 350 school houses, the cost has been unimportant as the Aquarium supplies only small forms of sea shore life, while the glass aquaria have been furnished by the Board of Education. These aquaria have furnished object lessons which have made the general study of natural history interesting instead of dull to the various classes which have received them. This work has increased in popularity and could not now be abandoned. It has taken practically all the time of one man from our small force of employees. In addition to the placing of aquaria in the school houses, special collections of small marine life have been kept in the laboratory for the use of teachers bringing their classes to the Aquarium. These classes have during the past year amounted to more than 4,800 persons, and their frequent presence in the limited space available has worked to the discomfort of the administrative office.

Among other things, the Aquarium is much in need of a good working library, about one-third of the books now in the building being the property of the Director. The collection of books, small as it is, has been frequently used by teachers and the general public. This has also proved a disadvantage, rendering the Director's services frequently necessary as librarian.

The Aquarium has frequently allowed its cramped quarters to be used as a meeting place for various societies interested in the promotion of the commercial fisheries and it is eminently fit and proper that the Aquarium building should be made useful in this way.

Our attendance has now become so great that the time has come for an increase in our exhibits in certain respects. These have hitherto consisted chiefly of fishes, the great division of invertebrates having been neglected on account of lack of space and proper facilities for handling them. This unevenness in our collections should be corrected especially as the Aquarium is frequently called upon to assist educational institutions and cannot respond on account of its limited facilities. Although all present exhibition space is fully occupied, it would be possible to increase our exhibits, by utilizing the space now occupied by machinery. With an outside engine house to which boilers, pumps, filters, distributing tanks and refrigerating plant could

be removed, this would at once become possible and would increase the exhibition space about one-sixth.

During the past summer the only entrance for visitors was, as a rule, uncomfortably crowded. Another entrance is badly needed. With the removal of the machinery the large rear doors opening on the sea-wall promenade, could be made available and would increase the safety of the public in case of accident when the building is crowded.

The Aquarium therefore needs an outside boiler and pump house in order to secure increased exhibition space and to allow for entrances proportionate to our phenomenal attendance.

The removal of machinery would give the Aquarium one-sixth more exhibition space. This would, however, mean only temporary relief, no provision being made for future growth. The building should really be enlarged so as to at least double the present exhibition space. This could be accomplished by increasing the height of the entire building as well as the front section. A pyramidal form would accomplish this without excluding light from the lower tiers of tanks.

We need a large class room for school work, space for a small working library, a marine laboratory, a medium sized assembly hall, a collecting boat, a wagon, a couple of trained zoological assistants and at least half a dozen more attendants. Our present working force is insufficient for the care of machinery, the proper care of our crowded exhibits of living creatures and the proper cleaning of the building necessary with our great crowds of visitors.

With a view to placing these important matters clearly before the Board of Managers, I include in this report a tentative plan for the enlargement of the building as shown by the architect's preliminary sketch, page 126.

It is quite possible to add two rooms to that section of the building now used for office purposes by a slight extension at each end of the second story fronting on Battery Park. This would supply increased office and library space. A third story on top of this section would afford space for a laboratory, class room and assembly hall. These changes would also greatly improve the external appearance of the building.

Up to the present time the improvements which have been made possible through the Improvement Fund granted by the City have necessarily been limited to the new water system and the piping and machinery connected with it. The tentative

plans presented herewith would involve an expense of perhaps \$100,000 as roughly estimated by the architect.

There are serious difficulties in the way of increasing the size of the present building. An increase in its height sufficient to permit of twice the present exhibition and office space would involve complicated construction. Large stairways would be necessary as the Aquarium visitors are too numerous to be transported by elevators. The weight of exhibition and distributing tanks, and also of visitors would be very great, while there would be difficulties in the way of proper lighting of the different tiers of tanks. The reconstruction of the Aquarium would moreover put it out of commission a year or more.

The present building is an old landmark and a plan for its removal would meet with opposition. The best results could only be secured by enlarged ground space, which would also meet with opposition in some quarters, as a curtailment of space in Battery Park.

An addition to the present building would be as nearly ideal as existing conditions permit, as the structure would be lower, would require no high stairways, would involve no closing of the present exhibition room and offices during construction and would permit of the use of the present machinery equipment with merely extended pipe lines.

Such an addition should be connected with the front of the present building, should be twice as wide and three stories high. Its first and second floors, like those in the old building, would be used for exhibits, while its third floor, extended partly over the old building, would furnish sufficient office, library and laboratory space. By such an arrangement "Old Castle Garden" would be permitted to remain as a rear wing.

The architect's preliminary sketches of such an addition are presented herewith. Plates I and II.

The present building is unsightly. It is well described in "*The New New York*" by John C. Van Dyke, whose reference to it is quoted herewith:

"If such a fate [referring to the City Hall and old Trinity out-living their usefulness] should overtake the Aquarium (formerly Castle Garden) there would be few mourners. It has no beauty about it, and the only thing that is saving just now is its enforced use. It makes a fairly decent building for an aquarium, and besides it is located in Battery Park and no one is crying for the land it occupies.









## NEW YORK AQUARIUM.

PLATE II. PRELIMINARY PLAN FOR THE ENLARGEMENT OF THE AQUARIUM: GROUND FLOOR PLAN.

The heavy black lines mark the walls of the old structure.



"It now houses the finest collection of fishes in the world, but it has almost completely lost its old character.

"Instead of covering a tiny island, it rests bedded in the stone slabs of Battery Park and looks somewhat like a half-sunken gas tank. Sentiment may cling about it, and the folk with neither New York ancestry nor history may reverence it because it is so 'very old' but in reality it is sad rubbish and has little place in the new city. There is not a building in lower New York that goes back to the time of the Dutch occupation, and very few that belong to the later English occupation."

Our legal maintenance fund of \$45,000 is no longer sufficient. With the proposed additions and improvements it should be increased to \$65,000. Even then it would be only one-third that allowed the other museums.

The maintenance of an aquarium like ours with four different water systems and with pumps running day and night is necessarily expensive and salt water is destructive to all kinds of machinery. Our present attendance undoubtedly warrants the increase proposed.

The various improvements enumerated above should place the Aquarium on a proper basis for the performance of its functions for some years to come.

Its development appears to be thrust upon us.

I am convinced that in the future the demands made upon this institution will continue to increase as they have in the past.

These conclusions are not based on the personal ambitions of the Director. Seven years of experience in the institution have simply led him to the belief that the public will utilize to the limit, all the facilities which the Aquarium can possibly be made to afford for its entertainment and instruction.

There has been no time during his incumbency when he has not been in contact with men of science and prominent citizens, both at home and abroad, who were keenly interested in the work of the institution, and these men all constantly urging the development of the Aquarium into a real museum.

Although the Aquarium has four water systems, that is, warm and cold sea water and warm and cold fresh water, it still lacks the equipment necessary to the keeping of many kinds of local marine species of both fishes and invertebrates. The new stored sea water system carries all tropical species and such local species as can stand warm water. Those which live entirely in cold water, require still to be kept in tanks supplied

by harbor water which is merely brackish as to salinity and is furthermore polluted by sewage.

During the past summer interesting invertebrates were procured from Woods Hole, Mass. These animals could not be kept in the stored sea water on account of its higher temperature and the harbor water was not sufficiently pure.

Before the Aquarium can be equipped to care for such animals it will be necessary to construct another storage reservoir with separate piping and pumps. This would enable us to cut off from the building entirely the cold but extremely foul water now pumped from the Harbor. Some of the machinery now in use would, however, be available for a new cold water system. It is extremely doubtful whether the Aquarium will ever be able to maintain an important collection of invertebrates without an additional water system which can be kept at a lower temperature.

During the early summer months the Aquarium has a great deal of difficulty in maintaining certain fresh water fishes in the Croton water now supplied to the building. This is due to the fact that a great deal of *Saprolegnia* develops in Croton water, which results in fungus growths very destructive to fish life.

There are several artesian wells in lower Manhattan and the experiment of drilling a deep well in Battery Park seems to be worth trying. This, if successful, would furnish water of a more even temperature, cold enough for trout and other northern fishes in summer and warm enough in winter to keep those fishes active which ordinarily lie inactive on the bottom of the tanks. It would very likely permit of the abandonment of our refrigerating plant which is now necessary to keep cold water species through the summer.

Another real need of the Aquarium is a boat for the collection and transportation of specimens. An important part of our marine exhibits is collected by our own men from adjacent waters, and the method is both expensive and unsatisfactory. For fishing trips as far south as Sandy Hook where very interesting collections can be made late in the summer, the cost of hired launches is considerable and transportation in such launches is far from satisfactory owing to the fact that the fishes are transported in ordinary shipping tanks. A vessel, built for the purpose, not unlike the old well-smacks used on the New England coast before the days of refrigeration, or like the well-smacks now in use at Key West and other southern points

for bringing fishes alive to market, would improve our exhibits and lower the cost of collecting specimens.

In order to vary the collections in the building we should avail ourselves of the admirable fishing grounds around Sandy Hook oftener than we are able to do, on account of the expense. Most of our local sea fishes are now collected from pound nets in the Gravesend Bay region and have to be shipped by express at heavy cost, and with inevitable injury to the specimens. The method is wasteful, and the exhibition stock is received in poor condition. For the collecting of fresh water fishes from the Bronx River, lakes in the City parks and elsewhere, wagons have to be hired at a cost of about \$350.00 a year. With our present maintenance fund even this expense is a serious one and the Aquarium exhibits frequently lack interesting things which might as well be on exhibition. The Aquarium therefore needs a wagon.

Three of the large floor pools in the Aquarium are devoted to seals and sea-lions for the reason that we have no funds to provide other marine animals of large size to take their place. Sea-lions should not be kept in the building because of the noise they make, and it is cruelty to animals to maintain a collection of harbor seals indoors. These animals do not thrive in winter when the building has to be heated. The customary number of four seals, purchased every spring, is lost from pneumonia before the next collecting season comes around. Two of these pools at least should be filled with large fishes such as the giant gars and hundred-pound catfishes of the Lower Mississippi. It would be quite impossible for the Aquarium to make collections in such distant places with its present appropriation. The only luxury indulged in is the annual collection of tropical fishes from the Bermudas.

From the foregoing it will be seen that the Aquarium is denied common facilities which have always been freely granted to our other museums. Its appropriation is now only one-fourth that allowed the other institutions.

Our improved water system has enabled us to get along with three Bermuda shipments instead of four as formerly. It is believed that hereafter we will be able to keep enough of these fishes living so that two shipments each summer will be enough, the total cost of which will be only \$500 a year as against \$1,000 formerly.

During the past four or five years the Director has been called upon to furnish a great amount of detailed information on

aquarium construction to park departments, chambers of commerce and private associations in such cities as Boston, Buffalo, Cleveland, Detroit, Chicago, San Francisco, Los Angeles, Galveston, St. Louis and Philadelphia. Detroit has already built a small aquarium which has an annual attendance of over 800,000 and which the Commissioner of Parks informs me is now considered an absolutely indispensable institution in that city. Officers of Harvard University are making renewed efforts to secure an aquarium for Boston and Professor Agassiz stated to me on a recent visit to New York that other cities should undoubtedly build public aquariums.

President Jordan of Stanford University expressed great interest in our Aquarium which he visited in November and proposes to renew the movement for an aquarium in San Francisco.

New York should not neglect its opportunity for developing its own Aquarium into a great marine museum which would unquestionably lead all other city institutions in the entertainment and instruction of its people.

The location of the New York Aquarium is ideal. With the subway extended to Brooklyn its attendance at once increased and it is now almost as well located with respect to Brooklyn as it is to Manhattan.

The new water system was rendered necessary by the impossibility of maintaining a collection of fishes in a foul water supply, without constant restocking, and has not only contributed to the permanence of the exhibits but has, during the past year, resulted in a saving of more than \$1,000 in coal bills. Without this extra thousand so saved by economical administration, it would not have been possible to finish the present year without a deficit nearly equal to that sum. There have been numerous breakdowns due to the unfortunate combination of machinery and salt water. Experience is showing that such expenses cannot be avoided in an aquarium.

If it is argued that the Aquarium has already a large enough collection, why not apply the same argument to the other City museums, which are not only of enormous size, but which are now building wings and making every effort to secure additional collections of all classes.

If our present City collections of living and mounted animals, or of fossils, or paintings or other museum exhibits, are not large enough, why place a limit on the collections of our Aquarium which although a small one is more important than



any other existing aquarium. The ideal aquarium has not yet appeared in any country.

Such an argument is illogical in view of the fact that the field of marine zoology is infinitely greater than any other zoological field, and at the same time is less understood. There are more zoologists at work in this field to-day than ever before and marine biological stations are multiplying throughout the civilized world. The most important zoological investigations of the future will have to do primarily with marine life. Science has no greater opportunity than could be found in the building of a marine museum, as no such special institution exists to-day, except the small but beautiful one now being built by the Prince of Monaco, and no city has a better reason for creating such an institution than the city possessing the New York Aquarium. The public is demanding it and the Aquarium's public consists of as good classes of people as those patronizing the other museums.

Large zoological gardens, natural history and art museums are common institutions in all countries, while public aquariums are small affairs everywhere except in New York. The small aquarium of Naples has made Naples famous. The small aquarium in the small city of Detroit attracts large crowds. With the four millions of people that are already crowding the Aquarium, it is absolutely necessary that we provide another entrance before next summer.

The temporary aquariums, maintained by the U. S. Fisheries Bureau at each of our American expositions since the World's Fair at Chicago, furnished impressive lessons to city governments and museum managers generally.

Having been detailed for duty at several of these government aquariums, I can speak with authority as to their wonderful popularity. At no American industrial Exposition has any art building or other exhibit, ever attracted one-fifth of the visitors that thronged the temporary aquarium.

With increased office space the Aquarium would naturally come into closer relations with the great fishery industries centered at New York City.

During his connection with the U. S. Fisheries Bureau, your Director originated the monthly bulletin of fishery information setting forth the fishery business of Boston and Gloucester which is worth several million dollars a year. These bulletins are now posted monthly in public places in the fishery centers of New England.

With a single clerk the Director could perform a similar service for the City of New York and would probably secure the same co-operation of the fishery trade that he secured in Boston and Gloucester.

The Aquarium, publishing such bulletins, would naturally attract the attention of the great fishery trade, which, in turn, should benefit the membership of the Zoological Society.

There are other avenues of usefulness open to a large and properly proportioned aquarium which need not be considered at the present time. The principal point at issue just now, is what are we going to do in the immediate future with the unwieldy crowds already thronging the Aquarium?

## PART II.—ADMINISTRATION

## THE COLLECTIONS

THE reservoir of stored sea water which has now been in use eighteen months has enabled us to maintain the salt water collections in better condition. Losses of specimens due to foul water having been eliminated from all tanks connected with the reservoir, the keeping of marine species is easier than ever before. The life of such species in captivity has been materially lengthened, and we have now only such difficulties to deal with as are connected with the proper feeding of tropical species in a situation remote from their original habitat.

On June 14th the Aquarium received an adult male and two young specimens of the nearly extinct West Indian seal, (*Monachus tropicalis*), all of which are at present in fine condition. The younger specimens, a male and female, have nearly doubled their size during the six months which they have passed in the Aquarium. This species appears to be well adapted to an indoor life. These animals appear to be possessed of a high degree of intelligence and are learning some of the tricks practiced by the West Indian seals kept in the Aquarium several years ago.

Three leather-backed turtles were received during the summer, but like all other specimens of this kind they did not survive. It seems to be quite impossible to induce this species to feed in captivity. Although specimens have been procured nearly every summer, it has never been possible to get them to take food.

During the summer three shipments of tropical fishes were received from Bermuda, whereas four shipments were received the previous year. The method of handling these fishes has been so distinctly improved that it may be possible to get along with still fewer shipments in the future.

A collection of fifty young specimens of the interesting mud fish, (*Amia calva*), the first specimens of the young of this species ever received at the Aquarium, was procured in June from Erie County, Ohio. They appear to be as hardy as the very large adults which have been living in the Aquarium for the last ten or twelve years, and are growing rapidly.

The Aquarium collector gathered from local waters large numbers of fishes and invertebrates. These were placed on exhibition, used as live food, or distributed to teachers for school

purposes, according to the character of the species and the supply available.

Through Dr. Tarleton H. Bean, State Fish Culturist, two large shipments of crappie or rock bass were received during the year from the State Forest, Fish and Game Commission. A few of these fishes were placed on exhibition in the Aquarium, and the balance of the collection was deposited in Prospect Park Lake, in Brooklyn, with a view to establishing the species and providing a convenient collecting ground there for the future.

The United States Bureau of Fisheries supplied the Aquarium fish hatchery with fish eggs of different kinds as usual, and the hatchery, which receives much attention from visitors, was kept in operation about nine months of the year. The young fishes reared in the hatchery, numbering about eight millions of specimens and ten species, were delivered to the New York Fish Commission, as in past seasons, for planting in state waters.

The species hatched were brook, lake, rainbow and black-spotted trout, chinook and silver salmon; yellow, white and pike perch; and whitefish. Exchanges of specimens were made with the Detroit Aquarium and the Sportsmen's Show in Boston.

A complete list of gifts to the Aquarium will be found under the heading "Gifts to the Aquarium."

#### ATTENDANCE

The year 1909, brought to the Aquarium more visitors than ever before; the total number of persons being 3,803,501, an average of 10,417 a day.

The increase over that of 1909 amounted to 1,267,354.

The following table shows the attendance at the New York Aquarium in 1909 by months:

January	Number of Visitors	142,428	Daily average	4,594
February	" "	184,020	" "	6,572
March	" "	193,020	" "	6,226
April	" "	273,031	" "	9,101
May	" "	324,771	" "	10,476
June	" "	335,781	" "	11,192
July	" "	528,266	" "	17,040
August	" "	513,421	" "	16,561
September	" "	603,979	" "	20,132
October	" "	369,430	" "	11,917
November	" "	206,227	" "	6,874
December	" "	129,127	" "	4,165
Total	" "	3,803,501	" "	10,417

The attendance for July, August and September averaged 17,887 a day. The largest number of visitors for a single day (September 25), was 64,795. The attendance for the first seven days of the Hudson-Fulton Celebration was 230,434 or 33,204 a day.

The number of visitors for the thirteen years of the Aquarium's history, as shown by the following table, now exceeds twenty-five millions:

1897	Visitors.....	1,635,252	Daily average.....	4,480
1898	“ .....	1,689,471	“ “ .....	4,628
1899	“ .....	1,841,330	“ “ .....	5,044
1900	“ .....	1,585,584	“ “ .....	4,344
1901	“ .....	1,644,856	“ “ .....	4,506
1902	“ .....	1,700,453	“ “ .....	4,659
1903	“ .....	1,547,873	“ “ .....	4,240
1904	“ .....	1,625,770	“ “ .....	4,554
1905	“ .....	1,726,170	“ “ .....	4,729
1906	“ .....	2,106,569	“ “ .....	5,771
1907	“ .....	2,131,393	“ “ .....	5,839
1908	“ .....	2,536,147	“ “ .....	6,948
1909	“ .....	3,803,501	“ “ .....	10,417
Total 13 years...		25,574,369	“ “ .....	5,389

This is a remarkable record, unequalled so far as available reports indicate, by any museum in the world. The great increase over that of any preceding year was due neither to the Hudson-Fulton Celebration in September, nor to anything unusual in the character of the exhibits. There were no increases in the collections, as the number of exhibition tanks could not be increased under existing conditions. The Aquarium is in fact its own advertiser, and it seems that no advertisement could be better than a well-pleased visitor.

#### IMPROVEMENTS

IMPROVEMENTS FROM MAINTENANCE FUND.—The five-inch fresh water supply line was renewed throughout, the original line having rusted out completely. The rusted-out spiral piping connecting the fresh-water tank overflows with the sewer, was replaced with a galvanized iron line. In order that leaking pipes be kept in repair it became necessary to convert the pipe trench from the Aquarium to the reservoir, into an accessible brick-walled tunnel, with iron-framed manholes.

Owing to the fact that the lead-lined piping in this tunnel was threaded, and the edges of the lead-lining not properly brought together, the piping was taken out and flanged; the edges of the lead-lining being carried on to the flanges to insure water tight unions at each joint. Later on this section of piping was again removed and the thin lining replaced with heavier lead, the original lining having collapsed under suction of the pump.

The lead-lining of the large seven-inch valves in the reservoir having also collapsed for the same reason, was replaced with heavier lead and the construction of the valves slightly changed to insure them against breakdowns in future. These repairs have made the lead-lined system throughout as nearly perfect as it is possible to make this kind of piping. There are a few sections of threaded piping still remaining in the valve room of the reservoir. It is our intention to remove and flange these sections also as a safeguard against breakdowns.

Owing to leaks which occurred in the tunnel pipes which could not be reached for repairs, several thousand gallons of the stored sea water in the reservoir were lost. A break in the lead heating coil in the tank room resulted in a further loss of stored sea water so that altogether more than half of the water in the reservoir was lost. An additional supply of pure sea water was secured from the vicinity of Sandy Hook lightship, and the reservoir filled up.

The broken lead heating coil was repaired and is giving entire satisfaction. This heater of chemical lead, which was installed last year, has proved a successful heater for sea water and has been a great satisfaction as compared with former heaters constructed of iron or bronze.

The small bronze heater employed for warming the water supplied to the central pool having worn out, was replaced with a copper heater coated with pure tin. It remains to be seen how long this material will endure under the peculiar conditions in which it is used.

During these various breakdowns which necessitated the stopping of the bronze reservoir pump, the salt water collections were carried safely for six days by the air pump alone. This was done in preference to turning on the harbor line and incurring the risk of attempting to keep ocean fishes in foul water.

This was the first employment of the air pump in the New York Aquarium, and its value as an accessory to the pumping equipment seems to be demonstrated.

The refrigerator system was extended to four additional tanks on the fresh water side of the house, which makes them available for additional cold water species in summer.

**AQUARIUM IMPROVEMENT FUND.**—A fund of \$5,000 from special Revenue Bonds granted in 1908 by the Board of Aldermen for a new roof and additional skylights for the Aquarium became available during the year and the work is now in progress. The disbursements from this fund are shown in the Treasurer's Statements.

#### AID TO SCHOOL TEACHERS

During the year, small aquaria were placed in seventy-five school-houses. These were furnished by the Board of Education and stocked by the Aquarium. Mr. Spencer who has attended to this work from the beginning, reports that he has stocked such aquaria in about 350 public schools. Some of the high schools have three or four aquaria. About 4,800 school children in classes, with their teachers, visited the laboratory of the Aquarium during the year. Some of the classes repeated their visits and showed considerable interest in their natural history lessons.

#### NOTES

On September 25, 1909, a bronze tablet containing the following data was placed on the Aquarium building as a contribution of the New York Zoological Society to the Hudson-Fulton Celebration:

"This building first known as West Battery erected 1807-1811—Called Castle Clinton after war of 1812—Ceded by Congress to New York City 1823—Subsequently known as Castle Garden—General Lafayette received here in 1824 President Jackson 1832 Kossuth 1851 The Prince of Wales 1860—Jenny Lind began singing here 1850—The landing place of eight millions of immigrants 1855-1890—Connected with the land by a bridge prior to 1869—Converted into an Aquarium 1896—Placed under control of New York Zoological Society 1902—Aquarium visitors twenty-one millions to 1909.

Erected by the New York Zoological Society.  
Hudson-Fulton Celebration 1909."

On May 5, 1909, the First Convention of the National Association of Shellfish Commissioners was held at the Aquarium. A number of important papers on oyster and lobster culture were read and the convention was addressed by Ex-Governor Stokes of New Jersey.

Permission was given to the Aquarium Society, a private association in this city, to hold its monthly meetings in the laboratory of the Aquarium.

Mr. Eben R. Sampson, Clerk of the Aquarium for sixteen years, died on June 2nd, 1909, at the age of eighty.

Respectfully submitted,

CHARLES H. TOWNSEND,

January 1, 1910.

*Director.*



**List of Gifts**  
**TO THE ZOOLOGICAL SOCIETY.**

*From January 1, 1909, to January 1, 1910.*

- ALBA, CAPTAIN PETER F., Mobile, Alabama:  
Corn Snake, Hog-Nosed Snake.
- ANDERSON, ARCHIE, New York City:  
Amazon Parrot.
- ANONYMOUS, New York City:  
Opossum (11 specimens).
- ANONYMOUS, New York City:  
Red Fox.
- ATWOOD, MISS L., New York City:  
Alligator.
- AUDUBON SOCIETY, New York City:  
2 Mockingbirds, Virginia Cardinal.
- BALCOM, DR. I. S., New York City:  
Brown Thrasher.
- BALDWIN, CHARLES B., New York City:  
Diamond-Backed Terrapin.
- BARTHEN, T., Ridgefield Park, N. J.:  
Raccoon.
- BEBERMA, H. C., New York City:  
Canary.
- BECKER, FREDERIC W., AND MATTHEW FARRELL, New York City:  
Gray Fox (3 specimens).
- BEEBE, MRS. C. W., New York City:  
Ross Geese (2 specimens).
- BENNETT, JAMES GORDON, New York City:  
Opossum (2 specimens).
- BIRDSEYE, CLARENCE, Winslow, Arizona:  
Swainson Hawk (2 specimens).
- BOND, E. J., Farmingdale, N. J.:  
Alligator.
- BORDEN, SETH A., Fall River, Mass.:  
2 Little Green Herons, Ruffed Grouse.
- BREWSTER, ROBERT S., New York City:  
Polar Bear.
- BROWN, MISS GEORGIANA, New York City:  
Woodcock.
- BROWNING, WILLIAM H., New York City:  
Red-Crested Cockatoo.
- BROOKS, BELVIDERE, New York City:  
Alligator.
- BUNGE, MRS. F. H., Wakefield, N. Y.:  
Red-Crested Cardinal.
- CARDWELL, DR. JOHN C., Brooklyn, N. Y. C.:  
Blacksnake (12 specimens).
- CERRI, MRS., AND CHEV. NICOLA, Cleveland, O.:  
Stormy Petrel.
- CHANLER, MRS. WINTHIROP, Genesee, N. Y.:  
Kestrel (2 specimens).

CHAPIN, MRS. E. W., New York City:

2 Cuthroat Finches, 2 African Silverbills, 2 Bronze Mannikins, 2 Black-Headed Mannikins, 1 Spice Finch, 1 Bib Finch, 1 Green Singing Finch, 1 Cordon Bleu, 1 Crimson-Crowned Weaver, 1 Red-Tailed Weaver, 2 Russ Masked Weavers, 3 Madagascar Weavers, 2 Pied Mannikins, 2 White Java Sparrows, 2 Chaffinches, 1 Greenfinch, 3 Canaries. Total, 29 specimens.

CHRISTEN, E., New York City:

Red-Shouldered Hawk.

CHURCH, F. E., New Rochelle, N. Y.:

2 Tovi Parrakeets, 2 Red-Faced Love-Birds.

CLAUSEN, W., New York City:

Undulated Grass Parrakeet.

CLEVENGER, MRS. C., New York City:

Albino Rabbit.

CLOVIN, MRS. N. J., Highlands, N. J.:

Box Tortoise.

COE, MISS MIRIAM S., New York City:

Tovi Parrakeet.

COLETTI, EMILE, New York City:

Alligator.

CONKLIN, THE MISSES RUTH, DOROTHY, GRACE AND CORA, Poughkeepsie, N. Y.:

Gray Squirrel (2 specimens).

CONNOR, MISS HELEN, Hoboken, N. J.:

Alligator.

CONSTANTINE, R. B., Summit, N. J.:

Japanese Phoenix Fowl.

CORBIN, AUSTIN, Manhattan Beach, L. I.:

Barn Owl (2 specimens).

CORINGTON, MRS. R. D., New York City:

Canary (2 specimens).

COSTELLO, LAWRENCE, New York City:

Red-Tailed Hawk.

COWLEY, MRS., New York City:

Canary.

COZZENS, FRED. H., Richmond Valley, Staten Island, N. Y.:

Screech Owl.

CRANDALL, LEE S., New York City:

Blue Jay (2 specimens).

CRANE, R. F., Georgetown, British Guiana, S. A.:

Double-Striped Stone Plover.

CRAVATH, MRS. PAUL D., Veraton, Locust Valley, L. I.:

Whistling Swan (2 specimens).

CUDLIPP, EDWIN, New York City:

Sea Gull.

DAHL, FRED., New York City:

Alligator.

DAVENPORT, DR. CHARLES B., Cold Spring Harbor, L. I.:

Jungle Fowl (2 specimens).

DE LEON, SOLON, New York City:

Copperhead Snake.

DE ROCHEMONT, ARNOLD, New York City:

Box Tortoise.

DESSAN, W. H., AND H. GUNDACKER, New York City:

Owl.

DE WITT, MRS., New York City:

Horned Toad.

DIENST, A. P., New York City:

Blue Solitaire.

- DIMICK, MRS. J. W., Rifton, N. Y.:  
Golden Pheasant (8 specimens).
- DOANE, MASTER ROBERT, New York City:  
Box Tortoise.
- DODGE, CLEVELAND H., New York City:  
Alaskan Brown Bear.
- DOMINICK, BAYARD, E. HUBERT LITCHFIELD, JR., AND HENRY SAMPSON, JR., New York City:  
Warthog.
- DOOLEY, MRS. JAMES, New York City:  
Gull.
- DOUAR, ROBERT, New York City:  
White-Headed Mannikin.
- DUKE OF BEDFORD, Woburn Abbey, England:  
Kiang, 4 Cashmere Deer.
- EMDE, JOSEPH, New York City:  
Towhee.
- ERNST, MISS GERTRUDE, New York City:  
Virginia Opossum (2 specimens).
- EXANOFF, MISS E., Brooklyn, N. Y. C.:  
Gray-Throated Parrakeet.
- FARRELL, MATTHEW, AND FREDERIC W. BECKER, New York City:  
Gray Fox (3 specimens).
- FERNANDEZ, J. JAMES, New York City:  
White-Nosed Coati-Mundi.
- FERRIS, VICTOR W., South Norwalk, Conn.:  
Rattlesnake (6 specimens).
- FLICKER, MRS. C., New York City:  
Starling.
- FREEMAN, E. L., New York City:  
Coati-Mundi.
- FREEMAN, J. S., Scarborough, N. Y.:  
Alligator.
- FRICK, JACOB, Brooklyn, N. Y. C.:  
Broad-Tailed Hawk.
- FROMKESS, H., New York City:  
Yellow-Headed Amazon Parrot.
- FURLONG, MRS. F. P., Hartford, Conn.:  
Bullfinch.
- GAMBLE, J. W., Greensboro, N. C.:  
Barn Owl.
- GAUDINEER, DR. WILLIAM J., New York City:  
Alligator.
- GOLDSMITH, A., New York City:  
Mink.
- GOOD, JOHN W., Newark, N. J.:  
Bald Eagle.
- GOTTHERDT, MRS. E. H., Bayonne, N. J.:  
Macaque Monkey.
- GRAFF, EVERETT W., Brooklyn, N. Y. C.:  
Alligator.
- GROSSMAN, B., Brooklyn, N. Y. C.:  
Jamaican Mockingbird.
- GRUBER, G., New York City:  
Dipsas Snake.
- GRUBER, GODO, New York City:  
South American Tree Snake (2 specimens).
- GUNDACKER, H., AND W. H. DESSAN, New York City:  
Owl.

- HADLEY, MRS. J. F., New York City:  
Robin, Kentucky Cardinal, Pied Java Sparrow.
- HEGEDUS, JOHN, New York City:  
Screech Owl.
- HERMAN, DR. A. WALTER, New York City:  
Garter Snake, 2 Bull-Frogs.
- HERZIG BROTHERS, New York City:  
Red Fox (2 specimens).
- HIGH, JR., JACK, Riverdale, N. Y.:  
Alligator, Blue-and-Yellow Macaw.
- HOLLIGAN, W. H., New York City:  
Robin.
- HOSMER, MRS. ESTELLE DE P., Tivoli, N. Y.:  
White-Tailed Deer.
- HOVEY, G. E., New York City:  
Ruby-Crowned Kinglet.
- HOWELL, THOMAS ANDREWS, New York City:  
Alligator.
- HUDSON, MRS. W. J. G., New York City:  
Tovi Parrakeet.
- HUEWEL, A. C., New York City:  
Box Tortoise.
- ILLMENSEE, MASTER GEORGE, New York City:  
Painted Turtle.
- JOHNSON, MISS ANNA, New York City:  
Starling.
- JOHNSON, MRS. H. C., New York City:  
Yellow-Fronted Amazon Parrot.
- KEELER, ERWIN, New York City:  
Marbled Salamander.
- KITTORN, PAUL, Kingsbridge, N. Y.:  
Crow.
- KLINGER, MRS. FANNIE, New York City:  
Alligator.
- KNOWLTON, MRS. C. F., New York City:  
Marmoset.
- KROEMER, ARTHUR, Hoboken, N. J.:  
Blue-Fronted Amazon Parrot.
- KUSER, ANTHONY R., Bernardsville, N. J.:  
2 Egyptian Geese, 3 Satinette Pigeons, 2 Cereopsis Geese, 3 Silky Bantams,  
1 Black Brant. Total, 11 specimens.
- LADIES' AUXILIARY OF THE NEW YORK ZOOLOGICAL SOCIETY, THE, New York City:  
Polar Bear.
- LEARYCRAFT, W. N., New York City:  
Belgian Canary (3 specimens).
- LEYDECKER, MR., New York City:  
Yellow-Fronted Amazon Parrot.
- LIEFERT, CHARLES, New York City:  
McFarlane Screech Owl.
- LITCHFIELD, JR., E. HUBERT, BAYARD DOMINICK AND HENRY SAMPSON, JR., New York City:  
Warthog.
- LOPER, MISS LOUISE, Rockdale, Texas:  
Horned Toad.
- LUICK, EMMANUEL, Bayfield, Wis.:  
Salamander (5 specimens).
- LUTZ, GILBERT CLAUDE, New York City:  
King Snake.

- LYON, HERBERT H., New York City:  
     Box Tortoise.
- MCGUIRE, Miss ANNA, Wakefield, N. Y.:  
     Alligator.
- MACK, WILLIAM, New York City:  
     Flicker.
- MARCUS, CHAPIN, New York City:  
     Coyote.
- MARINGOFF, BARNET, New York City:  
     Hog-Nosed Snake.
- MARSH, Miss DOROTHY, New York City:  
     Tovi Parakeet.
- MAURER, C., Third Officer, S. S. "Siberia," New York City:  
     Sloth.
- MEFFERT, MASTER JOHN HOWARD, Brooklyn, N. Y. C.:  
     Alligator.
- MERRIAM, Mrs. N., New York City:  
     Cockateel.
- MICHEL, FRED., New York City:  
     Box Tortoise (3 specimens).
- MILLER, CHARLES F., East Orange, N. J.:  
     110 Garter Snakes, 37 Water Snakes, 12 Brown Snakes, 4 Wood Turtles, 11  
     Painted Turtles, 11 Spotted Turtles, 14 Box Tortoises, 16 Musk Turtles,  
     2 Snapping Turtles, 21 De Kay Snakes, 5 Milk Snakes, 2 Ribbon Snakes,  
     1 Blacksnake. Total, 246 specimens.
- MILLS, E. L., New York City:  
     Red Newt (8 specimens).
- MINNETONKA CLUB, THE, New York City:  
     Snowy Owl.
- MOREN, Miss CALLA, Wakefield, N. Y.:  
     Mealy Amazon Parrot.
- MOSELEY, E. L., Sandusky, O.:  
     3 Blacksnakes, 6 Western Painted Turtles.
- MOTT, LAWRENCE, White Plains, N. Y.:  
     Opossum.
- MUCHA, FRANK, New York City:  
     Screech Owl (3 specimens).
- MUNICIPAL ZOOLOGICAL GARDENS OF BUENOS AYRES (*through Señor Clemente  
 Onelli, Director*), Buenos Ayres, Argentina, S. A.:  
     King Vulture.
- MURRAY, JAMES J., New York City:  
     Green-Cheeked Amazon Parrot.
- MURRAY, WALTER, New York City:  
     Gray Squirrel.
- MYLIUS, Mrs., Rosendale, N. Y.:  
     Common Macaque Monkey.
- NAUMANN, Miss ERNA, Brooklyn, N. Y. C.:  
     Box Tortoise.
- NEW YORK AQUARIUM (*through C. H. Townsend, Director*), New York City:  
     4 Alligators, 2 Indian Crocodiles.
- NICHOLS, HERMON A., Rye, N. Y.:  
     Pigeon (2 specimens).
- NIPPERT, GEORGE, Valhalla, N. Y.:  
     Red-Shouldered Hawk.
- NORTON, GEORGE F., New York City:  
     Spotted Salamander.
- O'LEARY, Miss JULE, Yonkers, N. Y.:  
     Angora Guinea Pig (3 specimens).

- OSTLEY, HUBERT D., Newbury, England:  
Pied Flycatcher.
- OTTO, JOHN J., Brooklyn, N. Y. C.:  
Surinam Turtle.
- PEAVEY, ROBERT W., Brooklyn, N. Y. C.:  
Copperhead Snake, 5 Bull-Frogs.
- PETERSEN, MAX, Hoboken, N. J.:  
Great Blue Heron.
- PHILHOWER, CHARLES A., Hopewell, N. J.:  
Hog-Nosed Snake.
- PURDIN, W. A., Arlington, N. J.:  
Alligator.
- PURSELL, MRS., New York City:  
Troupial.
- RAYMOND, MRS. J. C., St. Louis, Mo.:  
Gray Parrot, Amazon Parrot.
- REHM, MISS ANNA E., New York City:  
Box Tortoise (4 specimens).
- RENNO, P. N., New York City:  
Red-Tailed Hawk.
- ROBINSON, ESTATE OF J. K. (*through Miss Frances Robinson*), Greenfield Hill, Conn.:  
7 European White-Fronted Geese, 1 Little White-Fronted Goose, 2 Cackling Geese, 6 Snow Geese, 6 Canada Geese, 1 White Peacock, 1 English Ring-Necked Pheasant, 6 Golden Pheasants, 2 Silver Pheasants, 1 Lady Amherst Pheasant, 2 Chinese Geese, 2 White Chinese Geese, 2 Emden Geese, 19 Common Ducks. Total, 58 specimens.
- ROGERS, ARCHIBALD, Hyde-Park-on-Hudson, N. Y.:  
Horned Toad.
- ROSENGREN, MISS BERTHA, New York City:  
Geographic Terrapin.
- ROSSMAN, MRS. J. G., New York City:  
Opossum (2 specimens).
- ROWLAND, MISS DOROTHY B., Rome, N. Y.:  
Horned Toad.
- ROWLAND, EUGENE A., Rome, N. Y.:  
Horned Toad.
- SAMPSON, JR., HENRY, E. HUBERT LITCHFIELD, JR., AND BAYARD DOMINICK, New York City:  
Warthog.
- SCHAEFER, A., Stony Brook, L. I.:  
American Bittern.
- SCHETELING, C., Chief Officer, S. S. "Kaiser Augustin Victoria," New York City:  
Turnstone (2 specimens).
- SCHMIDT, HARRY C., New York City:  
Red Fox.
- SCOTT, FRANK L., Morristown, N. Y.:  
Mallard Duck (5 specimens).
- SHANNON, MISS EMILY, New York City:  
Chameleon.
- SHELDON, MRS. R. S., New York City:  
Undulated Grass Parrakeet (4 specimens).
- SIGLER, MRS. L., New York City:  
White-Fronted Amazon Parrot.
- SIMONSON, WILLIAM M., Hicksville, N. Y.:  
Green-Winged Macaw, English Pheasant.
- SIMPSON, MISS JEAN WALKER, New York City:  
Sable Antelope.

- SMITH, Miss FLORENCE A., New York City:  
Alligator.
- SPIRE, CHARLES, New York City:  
Roseate Cockatoo.
- SPOTS, RALPH L., New York City:  
Sea Gull.
- STONE, Miss M. G., Cambridge, Mass.:  
Orange-Underwing Parrakeet (3 specimens).
- STRAUSS, B. H., New York City:  
Golden Eagle.
- STRAUSS, MRS. OLGA, New York City:  
Green-Winged Macaw.
- SWEENEY, SAMUEL C., Hartsdale, N. Y.:  
Red-Tailed Hawk (2 specimens).
- TAYLOR, C. H., New York City:  
White-Fronted Amazon Parrot.
- TOBIN, EDWARD F., New York City:  
Red Fox.
- TORRES, MRS. New York City:  
Guatemalan Amazon Parrot.
- TRAFTON, MASTER HOWARD, New York City:  
Horned Lizard (2 specimens).
- VAN BRUNT, MRS. CHARLES H., New York City:  
Yellow-Headed Amazon Parrot.
- VAN NOSTRAND, BENJAMIN T., Brooklyn, N. Y. C.:  
Loon.
- VAN VORST, D. S., New York City:  
Amazon Parrot.
- VASS, A., New York City:  
Yellow-Cheeked Amazon Parrot.
- VOLLWEILER, MRS. H. D., Newark, N. J.:  
Alligator.
- WATERBURY, M. O., New York City:  
Alligator (2 specimens).
- WEICHERT, MRS. CORA, New York City:  
Dominican Amazon Parrot.
- WELLER, F. M., Philadelphia, Pa.:  
Flying Squirrel (9 specimens).
- WHIFFEN, EDWIN T., Clyde, N. Y.:  
American Bittern (4 specimens).
- WILLIAMSON, C. M., New York City:  
Alligator.
- WITHUR, MRS. F. H., New York City:  
Canary.
- WOOLLEY, HENRY S., Waterbury, Conn.:  
2 De Kay Snakes, 1 Ribbon Snake, 10 Garter Snakes, 28 Water Snakes, 2  
Flat-Headed Adders, 2 Blacksnakes, 2 Green Snakes, 2 Ring-Necked  
Snakes, 1 Milk Snake. Total, 50 specimens.
- WORTH, WILLIAM A., New Rochelle, N. Y.:  
53 Striped Snakes, 18 De Kay Snakes, 1 Box Tortoise, 1 Ribbon Snake, 1  
Hog-Nosed Snake, 3 Water Snakes, 2 Blacksnakes, 13 Garter Snakes.  
Total, 92 specimens.
- WURSTER, Miss GLADYS H., Jersey City, N. J.:  
Tovi Parrakeet.
- YOUNG, MRS. FLORENCE, New York City:  
13 Canaries, Lizard Canary.

**Miscellaneous List**

- DODGE, MISS GRACE M., Greyston, Riverdale, N. Y.:  
 2 Copper Plates, by J. J. Audubon, of Downy Woodpecker and Cow-Pen Bird.
- PRECHTEL, JOHN, Hoboken, N. J.:  
 Alcoholic specimen of Golden-Bellied Tree-Snake.
- BEEBE, C. WILLIAM, New York City:  
 The Animal Parasites of Sheep. By Dr. D. E. Salmon.
- CHURCH, COLONEL WILLIAM C., New York City:  
 The Sporting Rifle. By Walter Winans.  
 Sporting Incidents. By Allen, Jay and Steele.
- HOUSE, EDWARD J., Pittsburgh, Pa.:  
 A Hunter's Camp-Fires. By Edward J. House.  
 Northcliffe, Lord, London, England. The *London Times*, daily edition.
- RUSS, EDWARD, Hoboken, N. J.:  
 Report of the New Jersey State Museum for 1908—Birds, Their Nests and Eggs—Part II (2 copies).  
 Report of the New Jersey State Museum for 1906—Amphibians and Reptiles.  
 Report of the New Jersey State Museum for 1907—Mammals of New Jersey.

**Gifts to the Library**

- NEW JERSEY STATE MUSEUM (*through S. R. Morse, Curator*), Trenton, N. J.:  
 Report, New Jersey State Museum.
- NEW YORK FOREST, FISH AND GAME COMMISSION (*through Hon. James S. Whipple, Commissioner*), Albany, N. Y.:  
 Report, New York Forest, Fish and Game Commission.
- PENNSYLVANIA DEPARTMENT OF AGRICULTURE (*through Dr. H. A. Surface, State Zoologist*), Harrisburg, Pa.:  
 The Turtles of Pennsylvania. Surface.
- STATE LABORATORY OF NATURAL HISTORY, Illinois (*through Dr. S. A. Forbes, Director*), Urbana, Ill.:  
 The Fishes of Illinois. Forbes and Richardson.
- SMITHSONIAN INSTITUTION, Washington, D. C.:  
 Reports and other publications for 1909.
- TOWNSEND, C. H., New York City:  
 Parasites of Fishes. Gurley.
- U. S. FISHERIES BUREAU (*through Hon. George M. Bowers, Commissioner*), Washington, D. C.:  
 Reports and other publications for 1909.
- WINGATE, HAROLD, ACADEMY OF SCIENCES, Philadelphia, Pa.:  
 Proceedings of Academy of Sciences.



**List of Gifts to the**  
**NATIONAL COLLECTION OF HEADS AND HORNS**

(April 1, 1909, to April 1, 1910.)

THE F. H. BARBER COLLECTION.

GIFT FROM FREDERICK G. BOURNE, CHARLES F. DIETERICH, FREDERICK A. SCHIERMER-  
HORN, W. D. SLOANE AND LISPENARD STEWART:

- Roan Antelope, (*Hippotragus equinus*). 2 mounted heads; 2 pairs of horns.  
White-Tailed Gnu, (*Connochetes gnu*). 2 mounted heads; 1 pair of horns.  
Springbuck, (*Antidorcas euchore*). 5 mounted heads; 3 pairs of horns.  
White-Bearded Gnu, (*Connochetes albojubatus*). 2 mounted heads; 1 pair of horns.  
Greater Kudu, (*Strepsiceros capensis*). 1 mounted head; 2 pairs of horns.  
Lesser Kudu, (*Strepsiceros imberbis*). Mounted head.  
Bushbuck, (*Tragelaphus sylvaticus*). 3 mounted heads; 4 pairs of horns.  
Inyala, (*Tragelaphus angasi*). 6 pairs of horns.  
Speke's Sitatunga, (*Limnotragus spekei*). Horns.  
Cape Hartebeest, (*Bubalis caama*). 4 pairs of horns.  
Sassaby Hartebeest, (*Damaliscus lunatus*). 2 mounted heads.  
Steinbuck, (*Raphicerus campestris*). 2 mounted heads.  
Cape Oribi, (*Ourebia scoparia*). Mounted head.  
Common Waterbuck, (*Cobus ellipsiprymnus*). 2 mounted heads; 1 pair of horns.  
Defassa Waterbuck, (*Cobus defassa*). Mounted head.  
Uganda Kob, (*Cobus thomasi*). Mounted head; 1 pair of horns.  
Beisa Antelope, (*Oryx beisa*). 1 mounted head; 1 pair of horns.  
Gemsbuck, (*Oryx gazella*). 6 pairs of horns.  
Tufted Beisa, (*Oryx callotis*). Mounted head.  
Vaal Rhebuck, (*Pelea capreolus*). Mounted head.  
Bohor Reedbuck, (*Cervicapra bohor*). Horns.  
Roi Rhébok, (*Cervicapra fulvorufula*). 2 mounted heads; 1 pair of horns.  
Thomson Gazelle, (*Gazella thomsoni*). Mounted head; 2 pairs of horns.  
Loder Gazelle, (*Gazella loderi*). 2 pairs of horns.  
Somali Lowland Gazelle, (*Gazella pelzelni*). 1 mounted head; 2 pairs of horns.  
Somali Plateau Gazelle, (*Gazella spekei*). Mounted head.  
Grant Gazelle, (*Gazella granti*). Mounted head.  
Waller Gazelle: Gerenuk, (*Lithocranius walleri*). Mounted head.  
Soemmerring Gazelle, (*Gazella soemmerringi*). 2 mounted heads; 3 pairs of horns.  
Dorcas Gazelle, (*Gazella dorcas*). 2 pairs of horns.  
Swayne Hartebeest, (*Bubalis swaynei*). 2 mounted heads.  
Coke Hartebeest, (*Bubalis cokei*). 2 mounted heads.  
West African Hartebeest, (*Bubalis major*). 2 pairs of horns.  
Jackson Hartebeest, (*Bubalis jacksoni*). 2 pairs of horns.  
Topi Hartebeest, (*Damaliscus jimela*). Mounted head.  
Hunter Antelope, (*Damaliscus hunteri*). Mounted head.  
Bontebok, (*Damaliscus pygargus*). 2 pairs of horns.  
Cape Buffalo, (*Bos caffer*). 1 mounted head; 1 pair of horns.  
White Rhinoceros, (*Rhinoceros simus*). Horn.  
Black Rhinoceros, (*Rhinoceros bicornis*). 2 horns.  
Blackbuck, (*Antelope cervicapra*). Mounted head.

Addax, (*Addax nasomaculatus*). 1 mounted head; 1 pair of horns.  
 Lichtenstein Hartebeest, (*Bubalis lichtensteini*). Mounted head.  
 Eland, (*Taurotragus oryx*). 2 mounted heads; 4 pairs of horns.  
 Lechee Antelope, (*Cobus lechee*). 2 mounted heads; 1 pair of horns.  
 Sable Antelope, (*Hippotragus niger*). 1 mounted head; 2 pairs of horns.  
 Brindled Gnu, (*Connochetes taurinus*). 1 mounted head; 2 pairs of horns.  
 Pallah: Impala, (*Aepyceros melampus*). 3 mounted heads.  
 Reedbuck, (*Cervicapra arundinum*). 4 mounted heads.  
 Puku, (*Cobus vardoni*). Horns.  
 Blessbok, (*Damaliscus albifrons*). 2 mounted heads; 1 pair of horns.  
 Common, or Cape Duiker, (*Cephalophus grimmi*). 2 pairs of horns.  
 Speke Bottle-Nosed Gazelle, (*Gazella spekei*). Horns.  
 Cumming's Bushbuck, (*Tragelaphus roualeyni*). Horns.  
 Red-Fronted Gazelle, (*Gazella rufifrons*). Horns.  
 Redunca Antelope: Nagor, (*Cervicapra redunca*). Mounted head.  
 Hungarian Stag, (*Cervus elaphus var.*). Mounted head.  
 Scotch Stag Red Deer, (*Cervus elaphus typicus*). Mounted head.  
 Bush-Pig, (*Potamochoerus choeropotemus*). 2 mounted heads.  
 Warthog, (*Phacochoerus aethiopicus*). Mounted head.  
 Unidentified, 6 pairs small horns of antelopes.  
 1 Wolf skull.  
 1 Leopard skull.

BAKER, ARTHUR B., Washington, D. C.:

Thomas Uganda Kob, (*Cobus thomasi*). Horns.

BOURNE, FREDERICK G., Oakdale, L. I.:

(See the Barber Collection.)

CONTRIBUTORS' FUND, THE (see list of Contributors in Treasurer's Report):

Eld's Deer. Horns.  
 Neumann's Hartebeest. Horns.  
 Topi Hartebeest. Horns.  
 Eland. Horns.  
 Puku. Horns.  
 Goral. Horns.  
 Himalayan Tahr. 2 pairs horns.  
 Indian Blackbuck. Horns.  
 Indian Gazelle. Horns.  
 Inyala. Horns.  
 Gaur. Horns.  
 Roman Ox. Horns and skull.  
 Sable Antelope. Horns and skull.  
 Javan Banting. 2 pairs horns.  
 White-Tailed Deer. Antlers.  
 White-Tailed Deer. Antlers in the velvet.  
 Columbian Black-Tailed Deer. 2 mounted heads.  
 Goral. Mounted head.  
 Indian Muntjac. Horns.  
 Siberian Roe. Horns.  
 Himalayan Serow. Mounted head; 1 pair of horns.  
 Chamois. Horns.  
 Patagonian Guanul. Horns.  
 Alpine Ibex. Mounted head; 1 pair of horns.  
 European Mouflon. Horns.  
 East Caucasian Tur. Horns.  
 Chiru: Tibetan Antelope. Horns.

Siberian Moose. Antlers.  
 "Ketchang" Deer, (unidentified). 2 pairs of horns.  
 Cattalo horns.  
 Polished Argentine Cattle horns.

CRANE, A. ZENAS, Dalton, Mass.:  
 Narwhal Tusk.

DE RHAM, H. CASIMIR, Tuxedo, N. Y.:  
 Thian Shan Polo Sheep, (*Ovis karelini*). Horns and skull.  
 Turkestan Mountain Sheep, (*Ovis nigrimontana*). Horns and skull.  
 Indian Buffalo, (*Bos bubalis*). Horns and skull.  
 Burmese Banting, (*Bos sondaicus birmanicus*). Horns and skull.

DIETERICH, CHARLES F., New York City:  
 (See the Barber Collection.)

DISSTON, JR., HENRY, Philadelphia, Pa.:  
 Lord Derby Eland, (*Taurotragus derbianus*). 2 pairs of horns, (world record).  
 Mule Deer. Mounted head.

DOMINICK, JR., BAYARD; E. HUBERT LITCHFIELD, JR., AND HENRY SAMPSON, JR.,  
 New York City:  
 Topi. 1 skull; 1 unmounted head.  
 Robert's Gazelle. Scalp and skull.  
 Common Duiker. Scalp and skull.  
 Jackson Hartebeest. Scalp and skull, (2).  
 Haggard's Oribi. Scalp and skull.  
 Brindled Gnu. Scalp and skull.  
 Soemmerring Gazelle. Scalp and skull.

FEUSS, ANDREW W., New York City:  
 Bongo. 2 pairs horns.  
 Yellow-Backed Duiker. Horns.  
 Pampas Deer. Horns.

GRANT, MADISON, New York City:  
 Rocky Mountain Big-Horn. 2 mounted heads; 1 skull and horns.  
 Chamois, (*Rupicapra tragus*). 2 pairs horns, (world record).

GRINNELL, GEORGE BIRD, New York City:  
 White-Tailed Deer. Mounted head.

HARRISON, JR., GEORGE L., Philadelphia, Pa.:  
 Lechee Antelope, (*Cobus lechee*). Mounted head.  
 Cumming's Bushbuck, (*Tragelaphus roualeyni*). Mounted head.  
 Eland, (*Taurotragus oryx*). Mounted head.  
 Puku, (*Cobus vardonii*). Mounted head.  
 Haggard's Oribi, (*Ourebia haggardi*). Mounted head.  
 Jackson Hartebeest, (*Bubalis jacksoni*). Mounted head.  
 Baker Roan Antelope, (*Hippotragus equinus bakeri*). Mounted head.

HORNADAY, WILLIAM T., New York City:  
 Big-Horn Sheep, (*Ovis canadensis*). Female horns and skull.  
 Coues White-Tailed Deer, (*Odocoileus couesi*). Horns.  
 Hog Deer, (*Cervus porcinus*). Horns.  
 Sitka Black-Tailed Deer, (*Odocoileus columbianus sitkensis*). Horns.

LAWYERS' CLUB, THE, New York City (through George T. Wilson and William E. Coffin):

Mule Deer. Mounted head.

LITCHFIELD, JR., E. HUBERT; BAYARD DOMINICK, JR., AND HENRY SAMPSON, JR.,  
New York City:

(See under Dominick, Jr., Bayard.)

LODER, SIR EDMUND GILES, Leonardslea, England:

West African Bushbuck, (*Tragelaphus gratus*). Skull and horns.

Arcal Sheep, (*Ovis vignei*). Skull and horns.

Pampas Deer, (*Cervus campestris*). Skull and horns.

MADEIRA, PERCY C., Philadelphia, Pa.:

Waterbuck. Mounted head.

Thomson Gazelle. Mounted head.

Warthog. Mounted head.

MARTIN, JAMES S., New York City:

Prong-Horned Antelope. Mounted head.

MITCHELL, HON. MASON, American Consul, Apia, Samoa:

Jackson Hartebeest. Horns.

MONJO, F. N., New York City (through Captain George Comer):

Musk-Ox. Mounted head.

MURGATROYD, JOHN, New York City:

Chamois, (*Rupicapra tragus*). Mounted head.

Barren-Ground Caribou. Antlers and skull.

NEWLAND, TARLTON AND COMPANY, Nairobi, B. E. A.:

Jackson Hartebeest, (*Bubalis jacksoni*). 2 heads.

Topi Hartebeest, (*Damaliscus jimela*). Head.

Beisa Antelope, (*Oryx beisa*). Head.

Defassa Waterbuck, (*Cobus defassa*). 2 heads.

Brindled Gnu, (*Connochetes taurinus*). Head.

Thomas Uganda Kob, (*Cobus thomasi*). Head.

Bohor Reedbuck, (*Cervicapra bohor*). Head.

Black Rhinoceros, (*Rhinoceros bicornis*). Mask and horns.

Eland, (*Taurotragus oryx*). Head.

Hippopotamus, (*Hippopotamus amphibius*). Entire skin, for mounting, with skull and leg bones.

Jackson Hartebeest, (*Bubalis jacksoni*). 3 pairs of horns.

Topi Hartebeest, (*Damaliscus jimela*). Skull and horns.

Cumming's Bushbuck, (*Tragelaphus roualeyni*). Horns.

Grant Gazelle, (*Gazella granti*). 6 pairs of horns.

Thomson Gazelle, (*Gazella thomsoni*). 2 pairs of horns.

Haggard's Oribi, (*Ourebia haggardi*). Horns.

Coke Hartebeest (*Bubalis cokei*). 4 pairs of horns.

Pallah: Impala, (*Aepyceros melampus*). 3 pairs of horns.

Warthog, (*Phacochoerus aethiopicus*). Tusks.

Defassa Waterbuck, (*Cobus defassa*). Horns.

Jackson Hartebeest, (*Bubalis jacksoni*). Skull and horns.

Defassa Waterbuck, (*Cobus defassa*). Skull and horns.

Brindled Gnu, (*Connochetes taurinus*). Head skin.

Thomas Uganda Kob, (*Cobus thomasi*). Head skin.

Reedbuck, (*Cervicapra arundinum*). Head skin.

Cumming's Bushbuck, (*Tragelaphus roualeyni*). Skin.

Zebra. Head skin.

POTTER, WILSON, Philadelphia, Pa.:

Gift of mounting of one Moose Head.

Newfoundland Caribou. 4 mounted heads, collected on special trip made by Mr. Potter for these specimens, 1909.

RUNGIUS, CARL, Brooklyn, N. Y. C.:

Yukon Caribou. Antlers.

Prong-Horned Antelope. Series of 5 pairs of horns on skulls, to show variations.

SAMPSON, JR., HENRY; BAYARD DOMINICK, JR., AND E. HUBERT LITCHFIELD, JR.,  
New York City:

(See under Dominick, Jr., Bayard.)

SANFORD, DR. LEONARD C., New Haven, Conn.:

Yucatan White-Tailed Deer. Horns.

SCHERMERHORN, FREDERICK A., New York City:

(See the Barber Collection.)

SELOUS, F. C., Worpelsdon, England:

Sardinian Mouflon. Mounted head.

SEWALL, W. G., Boston, Mass.:

Black Mountain Sheep. Mounted head.

SHIELDON, CHARLES, New York City:

Yucatan White-Tailed Deer. Horns.

SLOANE, W. D., New York City:

(See the Barber Collection.)

STEWART, LISPENARD, New York City:

(See the Barber Collection.)

THORNE, SAMUEL, New York City:

Mounted head, with tusks, of adult male African Elephant.

WARD, ROWLAND, London, England:

Ourial. Horns.

Aoudad. Horns.

Burrhel. Horns.

Nilghiri Tahr. Horns.

Red Brocket. Horns.

Loder Gazelle. Horns.

Pampas Deer. Horns.

Siberian Roe. Horns.

Fore-Foot of African Elephant.

WHEELER, WALTER S., Philadelphia, Pa.:

Prong-Horned Antelope. Mounted head.

WHITNEY, HARRY, New Haven, Conn.:

White-Fronted Musk-Ox, (*Ovibos wardi*). Mounted head.

Greenland Caribou, (*Rangifer groenlandicus*). Mounted head.

Atlantic Walrus, (*Odobenus rosmarus*). Mounted head.

**Gifts to the Aquarium**

- ADAMS, WILLIAM C., New York City:  
Young Alligator.
- ALPERS, E. N., Brooklyn, N. Y.:  
Green Turtle.
- BAILEY, MISS M. A., New York City:  
Southern Turtle.
- BEVERLEY, G. F., Brooklyn, N. Y.:  
Young Alligator.
- BISHOP, HENRY, Baltimore, Md.:  
16 Fancy Japanese Goldfish (16 specimens).
- BREWSTER, CARROLL H., New York City:  
Young Alligator.
- BURDGE, ARTHUR, Highlands, N. J.:  
Sea Horse.
- CARSTARPHEN, MRS. F. E., New York City:  
Wood Turtle.
- CLAIBORNE, DR. J. HERBERT, New York City:  
Young Alligator.
- CORNELL, S. N., Lynbrook, L. I.:  
19 Snapping Turtle Eggs.
- CORNEY, E. E., Bradley Beach, N. J.:  
Blue Lobster.
- DORMER, M. H., Brooklyn, N. Y.:  
Crocodile (2 specimens).
- DORN, RICHARD, New York City:  
1 Rock Bass, 7 Spotted Sunfish, 1 Long-eared Sunfish, 1 Common Sunfish,  
1 Brook Sucker, 2 Stone Catfish, 3 Mudminnows, 3 Fresh-water Killi-  
fish, 2 Young Large-mouthed Bass. Total, 21 specimens.
- FOSTER, M. G., New York City:  
California Sea Bass (mounted specimen).
- GRAMBART, F. W., Garretson, Staten Island:  
Bullfrog.
- GREEN, EDWARD G., New York City:  
Young Alligators (3 specimens).
- HANNAH, MRS. T., Brooklyn, N. Y.:  
Box Tortoise.
- HANNIS, MISS J. G., New York City:  
Young Alligator.
- HARDRICH, W., Brooklyn, N. Y.:  
Young Alligators (2 specimens).
- HEALEY, CLINTON, Coney Island, N. Y.:  
Young Alligator.
- HOUGH, WALLS L., New York City:  
Crayfish.
- HUNTER & TRIMM Co., New York City:  
Young Crocodile.
- INGRAM, A. D., New York City:  
Young Alligator.
- JUINEZ, THE MISSES GERTRUDE AND FELICIA, Mt. Vernon, New York:  
1 Spotted Turtle, 1 Box Turtle.
- KNIFFIN, WALTER, New York City:  
Box Tortoise.
- LA VIOLETTE, C. V., Brooklyn N. Y.:  
Young Alligators (2 specimens), Painted Turtle.

- LEVY, L. MYRON, New York City:  
Green Turtle.
- LEVY, NATHAN, New York City:  
Painted Turtle (2 specimens).
- MABIE, CHARLES, Butler, N. J.:  
17 Pickerel, 49 Sunfish, 3 Bullheads, 4 Tadpoles, 1 Newt. Total, 74 specimens.
- MACK, MR., New York City:  
Banded Sunfish (4 specimens).
- MCDOWELL, HARRY M., Hoboken, N. J.:  
Collection of Helgramites.
- MCGREGOR, DR. JAMES H., New York City:  
Fire Salamander.
- MENGER, MASTER WALTER A., 330 Bainbridge Street, Brooklyn, N. Y.:  
Young Alligator.
- MOOK, M. C., Metuchen, N. J.:  
Young Alligator.
- MUELLER, H., Jersey City, N. J.:  
Brook Pickerel (8 specimens).
- MURRAY, M. H., Sandy Hook, N. J.:  
Spiny Box Fish.
- NEW YORK FOREST, FISH & GAME COMMISSION (*through Dr. T. H. Bean, Fish Culturist*), Albany, N. Y.:  
549 Crappie.
- OBERMILLER, A., New York City:  
4 Musk Turtles, 1 Spotted Turtle, 1 Snapping Turtle, 3 Painted Turtles.  
Total, 9 specimens.
- O'CONNOR, PATRICK, Brooklyn, N. Y.:  
Young Alligator.
- OERTEL, MASTER ERNEST, New York City:  
Hawksbill Turtle.
- OSTERMAN, A., New York City:  
Painted Turtle, Spotted Turtle.
- PAINE, ROBERT T., West Hoboken, N. J.:  
Green Turtle.
- PETERSEN, E., Hoboken, N. J.:  
Peruvian Tortoise (2 specimens).
- PREUSEE, WILLIAM, New York City:  
Greek Tortoise (2 specimens).
- RAEFLE, C. S., New Hartford, N. Y.:  
Young Alligator (2 specimens).
- REDFIELD, MASTER EDWARD, Closter, N. J.:  
Wood Turtle, Muhlenberg Turtle.
- RODICK, F., New York City:  
Loach.
- RUSSEL, GEORGE JOSEPH, New York City:  
Painted Turtle.
- SCHALL, S., New York City:  
Young Crocodile (2 specimens), Elephant Turtle.
- SCHULLIAN, CONRAD, New York City:  
Young Pompano.
- SHARP, W. W., New York City:  
Young Alligator.
- SMITH, M. H., New York City:  
Young Alligator.
- SMITH, MISS STELLA, New York City:  
Young Alligator.

- SOUTH SIDE SPORTSMAN'S CLUB (*through Mr. George P. Slade, President*), Oakdale, Long Island:  
24 Brook Trout, 10 Rainbow Trout. Total, 34 specimens.
- STORRS, ELWOOD, New York City:  
Young Alligator.
- THURSTON, W. E., Brooklyn, N. Y.:  
Young Alligator.
- TJETJEN, HERMAN, Hoboken, N. J.:  
Collection of Helgramites.
- TUXEDO CLUB (*through Mr. Edwin C. Kent*), Tuxedo, N. Y.:  
Albino Landlocked Salmon (17 small specimens).
- UNDERWOOD, A. G., Belville, N. J.:  
Fresh Water Sculpins.
- U. S. BUREAU OF FISHERIES, Washington, D. C.:  
10,000 Lake Trout, 1,000,000 White Fish, 5,000 Silver Salmon, 1,500,000 Yellow Perch, 5,000,000 White Perch, 1,000,000 Pike Perch, 20,000 Black-spotted Trout, 10,000 Brook Trout, 4,000 Rainbow Trout, 5,000 Chinook Salmon.
- VACHERON, L. E., Wood Haven, N. Y.:  
Green Turtle.
- WARD, MASTER SHELDON ELLIOTT, Hanover, Morris Co., N. J.:  
Diamond Backed Terrapin.
- YOUNG, WILLIAM, Brooklyn, N. Y.:  
Land Hermit Crabs (8 specimens).

### Purchases

- BLODGETT, W. K., Pt. Pleasant, N. J.:  
Leather-backed Turtles (3 specimens).
- FOSTER, J. R., Progreso, Yucatan:  
West Indian Seals (3 specimens).
- GIBERSON, S. EDWARD, Atlantic City, N. J.:  
Sea Horses (102 specimens).
- JEFFRIES, HARRY, Atlantic City, N. J.:  
Sea Horses (43 specimens).
- MCDONALD, MRS. JANET, Bayville, Maine:  
Harbor Seals (4 specimens).
- MOWBRAY, L. L., Hamilton, Bermuda—Tropical Fishes from Bermuda:  
13 Green Parrot-fishes, 4 Blue Parrot-fishes, 14 Rainbow Parrot-fishes, 6 Red Parrot-fishes, 12 Mud Parrot-fishes, 1 Rock Hind, 28 Spot Snappers, 23 Spanish Hog-fishes, 2 Hog Fish, 35 Foureyes, 6 Butterfly Fishes, 35 Squirrel Fishes, 1 Gray Snapper, 1 Black Grunt, 4 Nassau Groupers, 42 Red Sea Anemones, 2 Red Groupers, 2 Shark Suckers, 2 Queen Trigger Fishes, 17 Slippery Dicks, 2 Puffers, 16 Beau Gregory, 2 Soap Fishes, 12 Blue-heads, 1 Mollie Miller, 2 Trigger Fishes, 8 Locust Lobsters, 83 Angel Fishes, 3 Blue Tang, 13 Tiger Rock-fishes, 10 Blue-striped Grunts, 3 Salmon Rock-fishes, 11 Spotted Morays, 1 Green Moray, 10 Sturgeon Fishes, 23 Spiny Lobsters, 1 Pig Fish, 10 Sergeant Majors, 1 Bream, 17 Yellow Grunt, 6 Yellow-finned Grouper, 4 Graysby, 14 Coneys, 16 Hinds, 4 Octopuses, 6 Trunk Fishes.
- NEILSEN, ALEX., Venice, Erie County, Ohio:  
Necturus (6 specimens), *Amia Calva* (Mudfish), (51 specimens).
- SCHNOOR, MR. JACOB, Belford, N. J.:  
Menhaden (25 specimens), Drumfish (8 large specimens), Green Turtle.



STEAMER "ANGLER"—Collections from the "fishing banks" off the New Jersey Coast:

- 4 Squid, 4 Barndoor Skates, 84 Muttonfishes, 44 Bergals, 141 Sea Ravens, 6 Anglers, 19 Prickly Skates, 47 Sculpins, 1 Rock Crab, 24 Hake, 37 Star Fishes, 27 Black Fishes, 7 Puffers, 39 Sea Bass, 27 Dog Fishes, 11 Sea Robins, 2 Blue Crabs, 3 Eels, 6 Whiting, 1 Trigger Fish, 11 Fluke, 2 Conger Eels, 9 Porgies, 5 Anemones, 12 Miscellaneous Invertebrates.

JAVINS, CHARLES H. & SONS, Washington, D. C.:  
Slider Terrapins (6 specimens).

### Exchanges

DETROIT AQUARIUM, Detroit, Mich.:

- 6 Muskallunge, 10 Quillback, 4 Burbot, 13 Pike Perch, 17 Short-eared Sunfish, 9 *Necturus*, 3 Spotted Catfish, 5 Whitefish, 7 Small-mouth Black Bass, 11 Red-horse Suckers, 9 Common Suckers, 23 Sheepshead, 38 Stone Catfish, 34 Crappie, 1 White Bass, 18 Rock Bass, 7 Pike, 6 Fresh-water Drum, 6 Small-scaled Suckers.

NEW ENGLAND FOREST, FISH AND GAME SOCIETY., Boston, Mass.:

- Collection of fresh-water fishes among which were the following: Whitefish, Brown Trout, Spotted Catfish, Herring, Crappie, Blue-nosed Sunfish, Pike Perch, Suckers, Burbot, Mudfish, Brook Trout, Lake Trout, Rainbow Trout, Black Bass, Pickerel.

BY-LAWS  
OF THE  
NEW YORK ZOOLOGICAL SOCIETY

AMENDED TO JANUARY 21, 1910.

ARTICLE I.

MEETINGS OF THE SOCIETY.

SECTION 1. The office and place of business of the New York Zoological Society shall be in the City of New York, unless otherwise ordered.

SEC. 2. The Society shall hold its annual meeting for the election of Managers, and other business, on the second Tuesday of January, or such day thereafter during the month of January to which said annual meeting shall adjourn.

SEC. 3. Special meetings of the Society shall be called by the Secretary, upon the request of the President or the Chairman of the Executive Committee, or at the written request of ten members.

SEC. 4. Notices of all meetings shall be mailed to each member of the Society at least three days before such meeting.

SEC. 5. At meetings of the Society twenty members shall constitute a quorum.

SEC. 6. The order of business shall be as follows:

1. Roll call.
2. Reading of minutes not previously read.
3. Report of Executive Committee.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of the Director of the Zoological Park.
7. Report of Director of the Aquarium.
8. Election of Managers.
9. Communications.
10. Miscellaneous business.
11. Reports and resolutions.

ARTICLE II.

BOARD OF MANAGERS.

SEC. 1. The Board of Managers shall consist of thirty-six members, together with the Mayor of New York and President of the Park Board, or Commissioner for the Bronx, who shall be members *ex-officio* of the Board.

SEC. 2. Nineteen Managers shall constitute a quorum, but ten managers may transact current business, and adjourn, subject to the subsequent approval of a meeting at which a quorum shall be present.

SEC. 3. The Board of Managers shall hold an annual meeting on the third Tuesday of January, or on such day thereafter to which said annual meeting shall adjourn. Regular meetings of the Board may also be called by the Secretary on the third Tuesdays of October and April upon the request of the President or Chairman of the Executive Committee. Special meetings of the Board shall be called at any time by the Secretary, upon the request of the President or Chairman of the Executive Committee, or at the written request of five Managers.

SEC. 4. Notices of meetings of the Board shall be mailed to each Manager at least three days before such meetings.

SEC. 5. The successors to the outgoing class of Managers shall be elected by the Society at its annual meeting, but vacancies in the Board may be filled for the unexpired term by the Board of Managers, or by the Executive Committee.

SEC. 6. A Nominating Committee shall be annually appointed by the Executive Committee, and shall consist of three members of the Society at large, who shall nominate and post ten days before the annual election the names of twelve persons to succeed the outgoing class of Managers in a conspicuous place in the office of the Society.

SEC. 7. No person shall be eligible for election to the Board of Managers, except to fill vacancies, unless his name shall have been posted as a candidate by such Committee, or by not less than ten members, in writing, in a conspicuous place in the office of the Society ten days before the annual election. All candidates for election as Managers must be Life Members, Patrons, Associate Founders, or Founders of the Society.

SEC. 8. Any Manager who shall fail to attend three consecutive meetings of the Board, unless excused by vote of the Board, shall cease to be a Manager.

SEC. 9. The Board of Managers shall at its annual meeting elect a President, two Vice-Presidents, a Secretary, and a Treasurer, who shall hold office for one year, or until their successors are elected. The President, Vice-Presidents, and Treasurer shall be members of the Board.

SEC. 10. The Director of the Zoological Park, the Director of the Aquarium, and all other persons employed by the Society, shall be appointed by the Board or by the Executive Committee, and shall hold office during the pleasure of the Board.

SEC. 11. The Board shall, at its annual meeting, elect an Executive Committee and Auditing Committee, which shall hold office for one year, or until their successors are elected. The Board of Managers and the Executive Committee shall also have authority to appoint such other Committees or Officers as they may at any time deem desirable, and to delegate to them such powers as may be necessary.

SEC. 12. The order of business of the meetings of the Board shall be as follows:

1. Roll call.
2. Reading of minutes not previously read.
3. Report of Executive Committee.
4. Report of Secretary.
5. Report of Treasurer.
6. Report of Auditing Committee.
7. Report of Director of the Zoological Park.
8. Report of Director of the Aquarium.
9. Election of Officers.
10. Election of Committees.
11. Election of new members.
12. Communications.
13. Miscellaneous business.

SEC. 13. All reports and resolutions shall be in writing, and the ayes and nays may be called on any resolution at the request of one Manager.

SEC. 14. Whenever the funds of the Society shall permit, the Board of Managers or the Executive Committee may award medals or other prizes for meritorious work connected with the objects of the Society.

### ARTICLE III.

#### OFFICERS.

SEC. 1. The officers of the Society shall consist of a President, two Vice-Presidents, a Treasurer, a Secretary, and a Director of the Zoological Park. These officers, with the exception of the Director, shall be elected at the annual meeting of the Board of Managers, but any vacancy may be filled for an unexpired term by the Board of Managers, or by the Executive Committee, until the next annual election.

SEC. 2. The President shall preside at all meetings of the Board and of the Society, and shall be *ex-officio* a member of the Executive and Auditing Committees.

SEC. 3. The Vice-Presidents shall, in the absence of the President, perform his duties and possess his powers, acting in the order of their election.

SEC. 4. The Treasurer shall receive, collect and hold, subject to the order of the Board of Managers, or the Executive Committee, all dues, subscriptions, warrants from the City, fees and securities. He shall pay all bills as ordered by the Board of Managers or the Executive Committee, and shall report to the Society at its annual meeting, and to the Board of Managers at all regular meetings, and to the Executive Committee at each meeting. He shall keep all moneys and securities in some bank or trust company to be approved by the Board of Managers or Executive Committee. The books of the Society shall at all times be open to the inspection of the Managers.

SEC. 5. The Secretary shall be a salaried officer of the Society. He shall be present, unless otherwise relieved by the Board or Executive Committee, at all meetings of the Society, of the Board, and of the Standing Committees. He shall keep a careful record of all proceedings, shall have the custody of the seal, archives and books, other than books of account, and shall conduct the correspondence of the Society. He shall issue all notices and tickets, and shall perform such other duties as the Board may direct. He shall be a member *ex-officio* of the Executive, Aquarium, and Auditing Committees, and of the Scientific Council.

SEC. 6. The Director of the Zoological Park shall be elected annually by the Executive Committee at a salary to be determined by said Committee, and paid monthly from funds of the Society. He shall be the responsible administrative officer of the Park, and shall recommend to the Executive Committee candidates for the various positions in the Park. He shall also perform all such other duties in connection with the business, scientific, and literary administration of the Society as may be assigned to him by the Executive Committee.

SEC. 7. The Director of the Aquarium shall be elected annually by the Executive Committee, and shall hold office until removed or his successor is chosen by said Committee. He shall be the responsible administrative officer of the Aquarium, and shall recommend to the Executive Committee all candidates for positions in the Aquarium. The Director of the Aquarium shall be *ex-officio* a member and Chairman of the Aquarium Committee. He shall perform such other duties in connection with the Aquarium as may be assigned to him by the Executive Committee.

## ARTICLE IV.

## COMMITTEES.

SEC. 1. There shall be two standing committees, the Executive Committee and the Auditing Committee, which shall hold office for one year or until their successors are elected.

SEC. 2. The Executive Committee shall consist of seven Managers, together with the President and Secretary of the Society *ex-officio*. Four members shall constitute a quorum, and all meetings shall be called by the Chairman. The Executive Committee shall fill all vacancies in its own number and shall have the full powers of the Board of Managers, except so far as such delegation of power may be contrary to law.

SEC. 3. The Executive Committee shall have the control and regulation of the collections, library, and all other property of the Society, and shall have power to purchase, sell, and exchange specimens and books, to employ and control all officials and employees of the Society, Park, and Aquarium, and generally to carry out in detail the directions of the Board of Managers and the terms of any contract between the City, or Park Board, and the Society.

SEC. 4. All the rules and regulations for the examination of applicants for the various positions in the Park and Aquarium shall be made or approved by the Executive Committee.

SEC. 5. The Executive Committee may regulate the auditing and payment for all current accounts.

SEC. 6. The Executive Committee shall annually appoint an Aquarium Committee, whose duties and powers are set forth in Section 11 of Article IV of these By-Laws.

SEC. 7. The Executive Committee shall annually appoint a Nominating Committee, whose duties and powers are set forth in Sections 6 and 7, Article II, of these By-Laws.

SEC. 8. It shall also appoint a Scientific Council, whose powers and duties are set forth in Section 2 of Article V of these By-Laws.

SEC. 9. The Committee shall make a written report at each regular meeting of the Board of Managers.

SEC. 10. The Auditing Committee shall consist of three regular members of the Society, in addition to the President and Secretary, members *ex-officio*, and vacancies shall be filled by the Executive Committee. It shall be the duty of the Auditing Committee to audit, annually, the accounts of the Treasurer, of the Director of the Zoological Park, and of the Director of the Aquarium, and any other accounts of the Society, and shall report to the Board of Managers at its annual meeting.

SEC. 11. The Executive Committee shall annually appoint an Aquarium Committee, not to exceed eight members of this Society, who shall hold office until their successors are chosen. All vacancies shall be filled by the Executive Committee. The Director of the Aquarium shall be *ex-officio* a member and the Chairman of the Aquarium Committee, and such Committee may vest in him any or all of its powers. The Chairman of the Executive Committee and the Secretary of the Society shall also be *ex-officio* members of the Aquarium Committee. Three members shall constitute a quorum. The Executive Committee may delegate to the Aquarium Committee such powers as it may deem proper.

## ARTICLE V.

## SCIENTIFIC COUNCIL.

SEC. 1. The Executive Committee shall annually appoint a Scientific Council of not more than ten members, and shall fill all vacancies. Members of the Council shall hold office until their successors are appointed.

SEC. 2. The duties of the Council shall be to act as an advisory board in all matters pertaining to the scientific administration of the Society, and especially as to the scientific features of the Park, the promotion of zoology by publications and otherwise, and the preservation of the native fauna of America.

SEC. 3. Four members, including the Chairman, shall constitute a quorum. The Chairman shall be elected annually by the Council. The Chairman of the Executive Committee and the Secretary of the Society shall be members *ex-officio* of the council.

## ARTICLE VI.

## MEMBERS.

SEC. 1. The present members and such others as shall become associated with them, under the conditions prescribed by the By-Laws, shall be members of this Society as long as they shall comply with the By-Laws.

SEC. 2. Members failing to comply with these By-Laws, or for other good and sufficient cause, may be expelled from the Society by the Executive Committee.

SEC. 3. Candidates for membership shall be proposed and seconded by members of the Society. The name, occupation, and place of residence of every member as proposed shall be submitted for election to the Board of Managers or the Executive Committee, and such person, when elected, shall become a member upon payment of the annual dues, or of the fees as prescribed below.

SEC. 4. There shall be a class known as Fellows, which shall consist of members of the Society who have rendered marked services to science, and shall be chosen by the Executive Committee. The privileges and dues of Fellows shall be, in all respects, the same as those of regular members of the Society.

SEC. 5. The annual dues shall be ten dollars, payable in advance, on the first day of May of each year, but the Executive Committee may remit the dues for the current year in the case of members elected between January 1st and May 1st of each year. The classes of membership shall be as follows:

SEC. 6. The payment of \$200 at one time shall constitute any member a Life Member.

A member who has paid annual dues for a period of five years may thereafter, at any time, upon the payment of the difference between the amount of dues already paid and \$200, become a Life Member, but such payment shall be not less than \$100.

SEC. 7. The payment of \$1,000 at one time, or in the case of a Life Member, of \$800, shall constitute any member a Patron.

SEC. 8. The payment of \$2,500 at one time, or in the case of a Patron of \$1,500, or of a Life Member of \$2,300, shall constitute any member an Associate Founder.

SEC. 9. Any member who shall donate to the Society \$5,000, or property of equal value, or any Associate Founder who shall donate \$2,500, or any Patron who shall donate \$4,000, may be elected by the Board of Managers or Executive Committee a Founder.

SEC. 10. Any member who shall have donated to the Society ten thousand dollars (\$10,000), or its equivalent, may be elected by the Board of Managers or the Executive Committee a Founder in Perpetuity. Such Founder in Perpetuity shall have the power to designate by a last will and testament his successor, who shall thereupon be entitled to all the rights and privileges of the original Founder in Perpetuity, including the right of designating in turn his successor.

SEC. 11. Any member who shall have donated to the Society \$25,000, or its equivalent, may be elected by the Board of Managers, or the Executive Committee, a Benefactor. Benefactors shall have the rights and privileges of a Founder in Perpetuity.

SEC. 12. Persons who have rendered marked service in the science of zoology or natural history may be elected Honorary Members, but not more than three such Honorary Members shall be elected in any one calendar year.

SEC. 13. A resident member who shall have rendered marked scientific or professional services to the Society in any branch of its work may be elected by the Executive Committee a Life Member, Patron, Associate Founder, or Founder. A resident of New York who shall have rendered marked service in zoology or natural history may be elected by the Executive Committee a Permanent Fellow.

SEC. 14. Non-residents who communicate valuable information to the Society, or who have rendered marked service in the science of zoology or natural history, may be elected Corresponding Members.

SEC. 15. Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons, Life Members, Honorary Members, Permanent Fellows, and Corresponding Members shall be exempt from annual dues.

## ARTICLE VII.

### PRIVILEGES OF MEMBERS.

SEC. 1. A member's ticket admits the member and his immediate family to the Park on reserve days, and to all lectures and special exhibitions, and may be used by the member's immediate family, and shall be good for the current year.

SEC. 2. Admission tickets to the Park and Aquarium on reserve days are issued to members for distribution, and are good for the current year.

SEC. 3. Each member of the Society is entitled annually to a member's ticket and to ten admission tickets.

SEC. 4. Each member shall also receive one copy of the catalogue or hand-book, the report and official publication of the Society, and shall have all the privileges of the Library and Members' Building.

SEC. 5. No member shall be entitled to the privileges enumerated in this Article unless his annual dues shall have been paid.

SEC. 6. The Life Members shall have all the privileges of members and ten additional admission tickets.

SEC. 7. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall have all the privileges of Life Members, and shall in addition receive copies of all scientific works published by the Society.

SEC. 8. Any member who shall fail to pay his annual dues within three months after the same shall have become due, and after notice of thirty days, by mail, shall cease to be a member of the Society; subject, however, to reinstatement by the Board of Managers or Executive Committee for good cause shown.

SEC. 9. Any person elected to membership who shall fail to qualify within three months after notice of his election shall be considered to have declined his election; but such term may be extended by the Board of Managers or Executive Committee.

## ARTICLE VIII.

### FINANCES.

SEC. 1. The fiscal year of the corporation shall be the calendar year commencing January 1st and ending December 31st.

SEC. 2. Neither the Society nor any of its Managers or Officers shall contract any debt which, with existing debts, shall exceed in amount the funds then in the Treasury, except to meet expenditures for which the City is liable, and for which the Society will be reimbursed by warrants from the Comptroller's office.

## ARTICLE IX.

### AMENDMENTS.

SEC. 1. Amendments to these By-Laws may be proposed, in writing, at any meeting of the Board of Managers, and adopted by unanimous consent of the Managers present, or if such proposed amendment shall fail to receive unanimous consent, the Secretary shall, with the notices of the next meeting, send a copy of it to each Manager and state that it will be brought up for action at such meeting, when it may be passed by a majority vote.



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